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May 1989

Sky painters at work:
kites are back as
toys for grown-ups (p. 64)

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May 1989

Smithsonian

Volume 20, Number 2

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Smithsonian (ISSN 0037-7333) is published monthly by the Smithsonian Associates, 900 Jefferson Drive, Washington, DC 20560.
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Subscription price $20 a year in U.S. possessions, $33 elsewhere.
80 percent of dues is designated for magazine subscription. Single copy price, $2.50. Second-class postage paid at Washington, DC and additional mailing offices.
Editorial offices at 900 Jefferson Drive, Washington, DC 20560.
Advertising and circulation offices at 420 Lexington Ave., New York, NY 10170.
Members: Please address all subscription correspondence and change of address information to Smithsonian, P.O. Box 55593, Boulder, CO 80322-5593.
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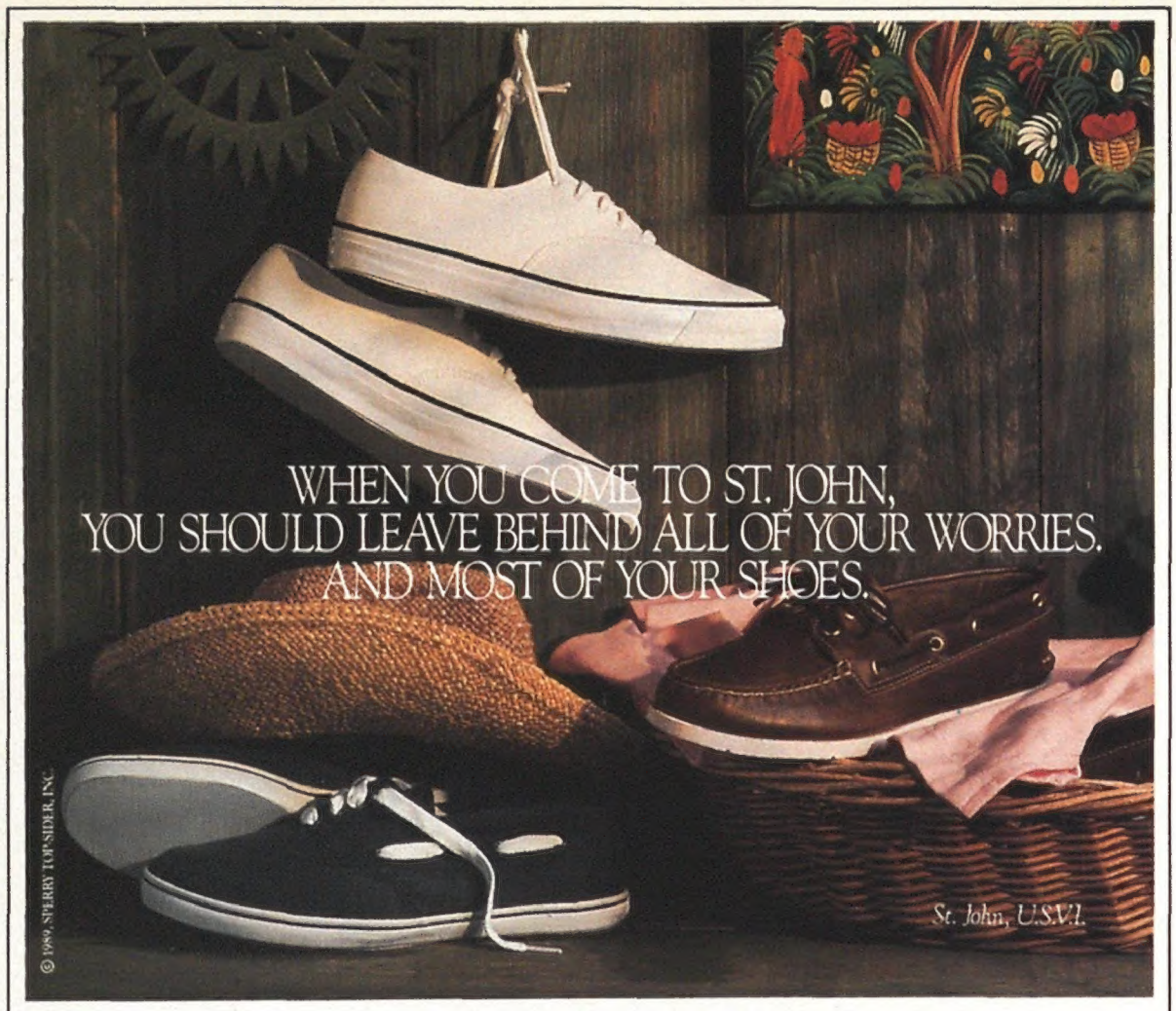
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Secretary Adams' comments

Smithsonian horizons

The art that tourists bring home may reflect declining standards of craftsmanship, but also innovation

"Tourist art," so named after its intended purchasers, is a troubling, contentious subject that is only beginning to receive the scholarly attention it deserves. Its very diffuseness makes generalization difficult, but the deprecatory overtones of the term may be partly related to the familiarity and recency of tourism itself. After all, we do tend to associate intrinsic beauty and value with remoteness from our own lives and times. The trekker to Nepal or the Louvre devotee is generally thought of as occupying a different social category from that of the collector of T-shirts or matchbooks. As a consumer good, tourist art displays some of the less desirable qualities of both. But my interest, and certainly that of the Smithsonian, is less in those who bring the stuff home than in what they bring and who made it.

The real meaning of the term "tourist art" is in reference to goods cheaply produced in non-Western settings, trading only on their exoticism and the inability of casual visitors to recognize the distinctive qualities of objects that instead have deep local roots of acceptance.

Associating such exotica with "art" is one source of difficulty. That word anticipates taking things home for display out of context in cabinets of curiosities or their equivalents, with at most vague reference to their original function and none to symbolic significance. This usually forces a variety of indigenous conceptual categories into our own model of art that is anything but universal.

Value communicated only by unfamiliar pecuniary standards can sweep away cultural restraints on the scale of production and strip traditional craft specialists of their role. These changes then tend to be quickly followed by a general decline in standards of craftsmanship. Most notably, this sequence occurs in situations of declining autonomy as larger (often worldwide) political and economic forces undermine local reciprocities, conventional wisdom and the apparent security of time-honored boundaries.

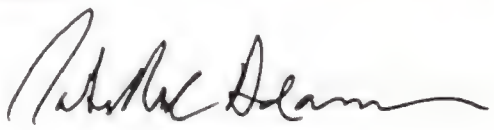
However, we must take into account cases that diverge from this model of a prevailing tourist-induced drift into decadence. It is going too far to say that all market-oriented alterations in designs, colors and technical standards, as for example those in contemporary Navajo rugs, are necessarily derivative responses to tourist tastes. At what level of local submissiveness to external dictation does the judgment cease to be arbitrary that these particular rugs are no longer "authentic"?

At an earlier time, Europeans gave detailed, explicit orders for commodities like Persian carpets and Chinese blue-and-white porcelain, yet those products pridefully retained their traditional standards of excellence and stamp of origin. Glass trading beads, aniline dyes and steel tools, introduced in various parts of the world along the perimeters of European expansion, contributed to real blossoming in arts ranging from textiles to woodcarving. To say the results are no longer "authentic" would seem to exalt an artificial (and mostly spurious) condition of timeless primitivism and isolation on the part of their supposedly pristine antecedents.

Similarly, hybrid arts crop up in unlikely places and belie any impression of a general dampening of local creative impulses. Susan Vogel, executive director of the Center for African Art in New York, takes note in a recent letter of new markets in Africa for

> flourishing, essentially commercial art such as the barbershop signs, truck and bus decorations in the cities. New markets exist in the rural areas too for—among other things—elaborate cement tombs with life-size figures, and for coffins carved and painted to resemble giant fish, crops, cars and so forth. These new genres sometimes include really inspired works. They are usually made by the members of one ethnic group for patrons from another, essentially "foreign" group with no detrimental effect, probably because artist and patron share assumptions about how the work should look, and what it means.

There may be in her last sentence an important clue to at least one form of divergence from the general model of a tourist-induced decline. But it only underlines the trackless wilderness of new collecting subtleties and possibilities into which tourist art is driving our museums.



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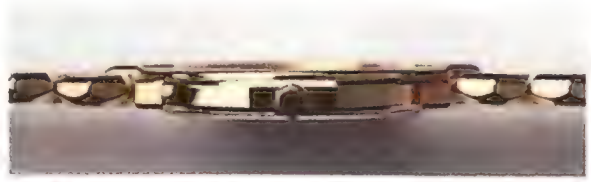

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Letters to the Editor

Smithsonian horizons

Dear Sir: Secretary Adams' comments, in your March issue, on the history of the ivory trade and its uses in the piano industry were of great interest to the Piano Technicians Guild, an organization of piano tuners, technicians, repairers and restorers.

During its 31st annual council meeting in St. Louis last summer, delegates from 165 chapters voted unanimously to oppose the use of new ivory in manufacture and restoration of pianos, and to support a ban on all trade in new ivory.
Ronald L. Berry, President
Piano Technicians Guild
Indianapolis

Loons

Dear Sir: Returning last spring to open Pine Island Camp on Great Pond in Maine's Belgrade Lakes, we were distressed to find a pair of loons incubating two eggs within eight feet of where the portable docks had to go.

In ten days 60 boys would arrive, and there was no way to close off the only swimming and boating area Pine Island affords. Everything we had ever heard indicated that loons abandon their eggs or young even when slightly disturbed. In anguish, we assumed ours would do the same.

But they did not leave. The boys arrived, the situation was explained to them but, although we all did our best, waterfront activity could not be conducted in silence. Everyone took an immense interest in loons and loon lore. More than one person was thrilled to see a loon flash by under his canoe or rowboat. Some, while swimming, even had a loon pop up near them.

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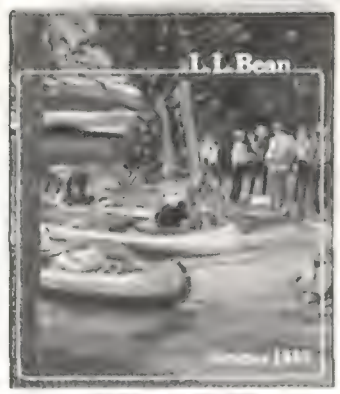

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the scene of a great Fourth of July celebration. We prayed that the eggs would hatch and the loons be gone by then, but nothing doing. The night was filled with light and sound. We expected the worst. But during the night the chicks hatched and the parents went about their duties as tranquilly as before.

The boys had a contest to name the chicks. "Uncle Sam" and "Spooky" won the day. Now, what will this summer bring? Will Uncle Sam and Spooky return to us?

Eugene L. Swan jr.
Athens, Maine

Dear Sir: As a teenager summering in the Adirondacks in the early 1930s, I often heard the haunting calls and laughter of loons but seldom saw them. One day, rowing on Blue Mountain Lake, I spotted one on the water, not far away. I approached cautiously. It let me get quite close before diving. We played this game for some time, the loon surfacing nearby, but always in a different direction.

Now living on Bayou Texar in Pensacola, I saw a loon on my beach one morning. It watched alertly as I carefully approached, but made no effort to escape. It did not seem to be hurt. I gently picked it up and examined it, and it neither struggled nor protested; there was no apparent injury. The plumage was slick and healthy looking, the eyes bright. Set down, it didn't move; placed in water, it slowly swam away. A few days later there was a dead loon on the beach near the same spot. Later I read that a great many loons had been found dead along this section of the Gulf coast, but no disease seemed to account for the deaths.

Although loons are frequent winter visitors here, they are always silent, never uttering their familiar calls and laughter.

Douglas A. Parker
Pensacola, Florida

Dear Sir: During many happy summers spent on my family's island in Lake Waukewan just north of Lake Winnipesaukee, I loved the laughing call of the loons. Our Airedale, a great swimmer determined to catch one, was driven crazy. Invariably, they dove before he could reach them.

Now I live on an island in Puget Sound and occasionally hear a loon call. But it isn't like New Hampshire.

Jean Hilliard Moore
Freeland, Washington

Dear Sir: I spent countless weeks, over a period of 30 years, on backwoods lakes of northern British Columbia, drifting noiselessly, watching the antics and habits of the lovely loon. They seem to know they are being watched, and they preen and pose majestically. All day and into the darkening hours of the late evenings their plaintive calls are heard.

Once airborne, loons fly very well. I have watched from my boat while a pair flew in a very precise, large circle, calling back and forth to each other.

With the daily stresses of business and the hectic speed of the day-to-day struggle, it takes only one pure call from a loon, even on a TV documentary, and I am once again at ease on some beautiful Canadian lake.

Bill Davison
Toppenish, Washington

Dear Sir: To my surprise and delight, in a hospital elevator I found myself standing next to a man who was wearing a beautifully silk-screened shirt with a scene of two common loons floating peacefully by a lakeshore. I said: "Oh, I see that you are a loon fan." He gave me a strange look, a sad smile, then shook his head. "No, I'm just related to one. I get things with loons on them every year for my birthday!"

Roland Maust
Canton, Ohio

Nightmares

Dear Sir: Robert Wernick makes several snide remarks about psychoanalysis and psychoanalysts. One such is his reference to psychoanalyst Melanie Klein's recommendation that children who wake up screaming be subjected to analysis by play therapy. He then goes on to say: "Since close to half of all children have such frights now and then, and since the average analysis lasts at least two years, such a proposal would create a class of millionaire analysts and turn half the world's parents into gibbering idiots."

Wernick may not agree with the approach or cost of psychoanalysis, as I myself, a psychologist, do not for most individuals. But such cheap shots against this profession, or against any profession, do not belong in SMITHSONIAN. Wernick's otherwise valuable contribution to our understanding of dreams is tainted by their inclusion.

John Miles Evans, PhD
Santa Fe, New Mexico

Dear Sir: As an anesthesiologist I disagree with Mr. Wernick's description of awareness during anesthesia.

Awareness is most common in women having a cesarean section under general anesthesia, where the anesthesiologist is trying to minimize the effects of powerful drugs on the baby.

There may be some degree of recall in 5-10 percent of all anesthetizations. Most of us warn our patients, especially pregnant ones, of the possibility. Postoperative explanation and reassurance are often sufficient to put the patient's mind at rest.

Awareness is usually auditory, rarely visual as you described. Noises heard may be instruments being replaced on tabletops. The sound of a surgeon proclaiming his latest profits in the stock market or discussing the physical attributes of the patient are well reported in medical literature, and teach operating personnel lessons of modesty and silence.

The awareness of pain during anesthesia is probably less common. When it does occur it is usually at the end of the procedure, when the patient is being awakened.

Mark B. Smith, M.D.
University of Oklahoma
College of Medicine
Oklahoma City

Richard Halliburton

Dear Sir: Your article recalled a strange encounter about 1971 at the Yucatecan ruins of Chichén Itzá. As I carefully climbed down from the top of the temple of Kuculcán on a typically hot *puuc* (Maya hill country) day, a frail elderly man started up. Though a small retinue of traveling companions was encouraging him, the old man was negotiating those high, narrow steps by himself.

He was Halliburton's father, at age 91 intent, he said, on repeating as many of his son's adventures as he could.

Neil J. King
Skokie, Illinois

Dear Sir: David Schwartz's article brought back wonderful memories of reading Halliburton in my 1950's childhood. He was my hero: a bold adventurer laughing in the face of death, searching for mystery after mystery, going where few had gone before.

As an adult I visited the Maya ruins at Chichén Itzá and stood at the edge of the well into which Halliburton had

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jumped. I could almost imagine him standing where I stood, looking down and, after some bold remark, taking a dive into its midst with no fear of what lay in those stagnant waters. What bravery, I thought as a child; "He was nuts!" said the adult.

He taught us much of the wonders of the world, in prose that conveyed his excitement. Indiana Jones may have his hat and bullwhip, but Richard Halliburton had the spats and the real adventures.
Edward N. Bomsey
Annandale, Virginia

Ballroom dancing

Dear Sir: When I was a sophomore at MIT in 1974, a course in ballroom dancing was offered to a sellout crowd during the January independent activities period. We formed a ballroom dance club and made forays to the few ballrooms in the environs of Boston, much to the amusement of older patrons. A national weekly newsmagazine covered these activities at MIT and a handful of other universities, noting that period in the early '70s as the renaissance of ballroom dancing—a somewhat ironic, very therapeutic and totally distracting relief from our studies at the 'Tute.
Mihal E. Gross
Summit, New Jersey

Dear Sir: The apache dance, which *Webster's Third International* defines as "a ballroom dance with close contact, jerks, and spins," originated in the early 1900s as a violent duet dance in the Parisian working-class cabarets. Later, a subdued version was popularized in the United States.

In the early 1930s at the University of Oklahoma, our fraternity's annual dance was called the Apache Dance. We decorated with burlap bags and old newspapers, and used old chairs and tables to accentuate the "underworld" atmosphere. The fellows wore toughie-type caps and shirts, and the girls the shortest, tightest skirts and most colorful blouses. To me, those annual dances would have been most romantic indeed, had my girlfriend not lived 1,400 miles away in Baltimore.
Finch White
Oakton, Virginia

Dear Sir: On the train from the Lake District to Bicester, England, this past October, the couple in their 80s sitting opposite me had just returned from an exhibition of ballroom dancing. They have been ballroom dancing most of their lives and attend all the meets, "where you meet ever such nice people."

"How lovely," I sighed.
Robert Lee Gross
Arnold, Maryland

The search for mass

Dear Sir: Newton is turning in his grave. Author Charles Mann's 180-pound (on Earth) astronaut indeed weighs less on the moon and is weightless out in space, beyond Earth's gravitational pull. And the astronaut's mass is constant but it is not 180 pounds. It is 81.7 kilograms. Pounds are a unit of force, as are newtons. Kilograms are the most-used units of mass. The same *mass* exhibits a different *weight* (force) in different gravitational environments. This matter was not trivial for me when I was a freshman physics major. Confusing pounds with kilograms incurred the wrath of professors and the suggestion to perhaps switch majors to something taught at the other end of the campus.
Maxon Buscher
Cambridge, Massachusetts
Thanks to Mr. Buscher for setting us straight on this weighty matter. Ed.

Book dedications

Dear Sir: You brought to mind two most unusual dedications that appeared in books by Cornell Woolrich. From *Phantom Lady*: "To apartment 605, Hotel M—in unmitigated thankfulness (at not being in it any more)." And from *The Bride Wore Black*: "To CHULA and Remington portable No. NC69411 in unequal parts."
Terry Bigham
Bristol, Rhode Island

Dear Sir: A deserving contribution to the collection of original dedications is one by a former graduate student in my laboratory: "This dissertation is dedicated to my loving wife . . . and to Stuart Pharmaceuticals, the makers of Mylanta."
George Melnykovych
Overland Park, Kansas

Dear Sir: More intriguing than dedications are prefaces, particularly when one finds oneself receiving very special credit from an author. But who reads prefaces?
Eleanor W. Blau
Bronx, New York

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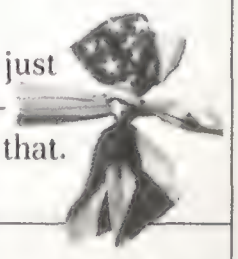

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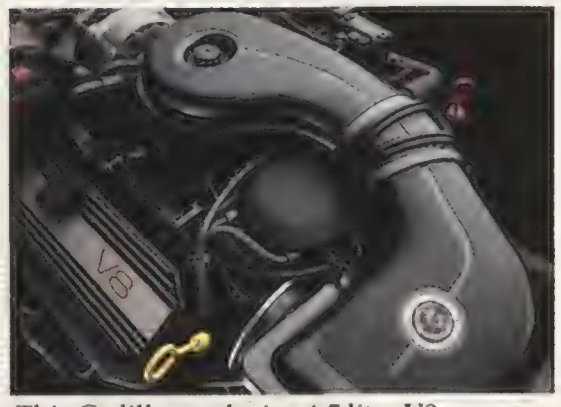

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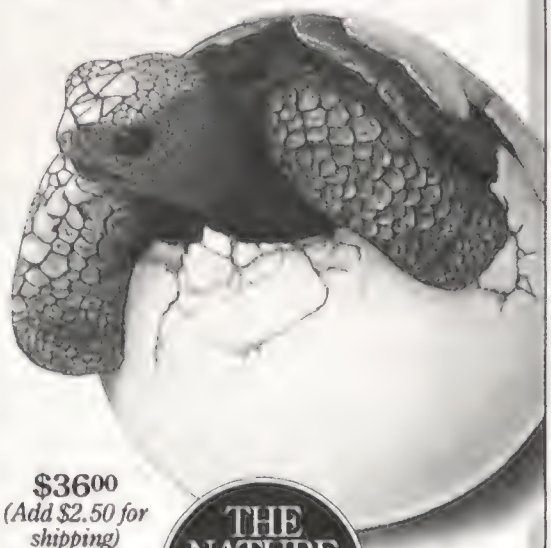

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The object at hand

Tree stump at NMAH was severed by bullets at the Bloody Angle battle.

A new column based on objects in the Smithsonian's collections will appear occasionally in this space. Ed.

In a glass case, in a quiet, shadowy hallway of the National Museum of American History stands a dark tree trunk, splintered off at about the height of a man's shoulder. Near the ground it is 22 inches across, with the bark still on. At the top, where it was violently broken off, it is about 10 jagged inches in diameter and looks as though it could have been chewed through by a giant beaver.

It is a stump of oak, one of the strongest woods known, and it is a curious item even for a history museum—even after you see the bullets. There are dozens of them—lead minié balls whitened by time, their flat bases embedded a half-inch or more into the solid wood. The oak is fantastically splintered and shattered, fuzzy as an old mallet head. Here and there a series of bullets have burrowed straight in, and more bullets have chipped away at the holes they made, leaving a strange naked ridge of wood with a furrow along its top.

But this large oak, which stood just behind the Confederate line at the Battle of Spotsylvania Courthouse, was once about as famous as a tree could be.

Spotsylvania was one of the deadly milestones in Ulysses S. Grant's final grinding push to destroy Robert E. Lee's army. It would lead from the Battle of the Wilderness in eastern Virginia to the slaughter at Cold Harbor, to the long sidling siege of Petersburg and at last, nearly a year after the invasion began, to Appomattox, ending a war that cost America some 500,000 lives. The place where this tree stood is known as the Bloody Angle, so named for a scene of almost indescribable carnage. Practically every Union regiment that fought in the battle claimed to have shot the oak down, and just after the war's end a year later, a soldier in General Sherman's army, visiting the battlefield, reported in his diary that he had seen the "famous tree. . . . It lay lengthwise of the trench on the Confederate side. The tree had been not more than ten feet from the Union line."

About that time some other homeward-bound Union soldiers, passing through, found that the stump had been removed. When they asked the local innkeeper what had happened to it, he said he had no idea. However, a servant whispered that they might try the smokehouse. When the proprietor refused to give them the key, they broke down the door—and there was the stump. It was "liberated" and brought to Washington.

In 1876, the War Department let the stump be displayed at the Centennial Exposition in Philadelphia, after which, in 1888, it was brought (as the country has come to expect) to the Smithsonian.

May 12, 1864—they said it was the worst moment of the whole war, the men who were in it. It wasn't a moment, either; it was 20 hours of insanity, two armies shooting at each other at arm's length across a parapet, so close their battle flags nearly touched across the works. Someone has calculated that the

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average soldier fired more than 400 bullets in that time.

The Confederate breastworks were about four feet high, heavy timbers banked with dirt, with a head log set in place about a foot above the parapet, leaving a firing slot. Men grew so frantic to shoot that they ignored the slot and simply stuck their rifles across the head log, lifted the stock with one hand and pulled the trigger with the other, firing blindly into the mass of enemy troops.

They could hardly miss. Union men were lined up 20-deep in places. Two Union cannon, literally touching the parapet, discharged double canister at the defenders until the artillery crews and their horses were wiped out.

"Slaughter became an end in itself, unrelated to issues or objectives, as if it had nothing whatever to do with the war," Shelby Foote wrote in his three-volume *The Civil War: A Narrative*. "Troops were killed by thrusts and stabs through chinks in the log barricade, while others were harpooned by bayonetted rifles flung javelin-style across it. Sometimes in this extremity even the instinct for self-preservation went by the board. From point to point, some wrought-up soldier would leap on the parapet and fire down into the opposite mass of blue or gray, then continue this with loaded rifles passed up by comrades until he was shot down and another wrought-up soldier took his place."

It rained all day. Corpses lay five deep in the mud, some reduced by repeated fire to torn bits of rag and bone. As night drew on, exhausted men would simply lie down and fall asleep amid the uproar. Rifles became so clogged with powder that they blew up. In the crush it was impossible to relieve troops, so reserve units passed their fresh rifles along to those in front. Men's lips were crusted from biting off cartridge heads. Their shoulders and hands were coated with mud from the rifle butts because they had to stand the weapons on end to reload. Some guns were found with as many as six charges rammed home: young soldiers, no doubt, so excited they forgot to pull the trigger between times.

Most of the shots were unaimed, which is why the tree caught so many bullets. It fell around midnight, after the firing had subsided and shortly before the Confederates abandoned their position.

At Spotsylvania on May 12, 1864, fighting raged for 20 hours, with some of heaviest rifle fire of the war.

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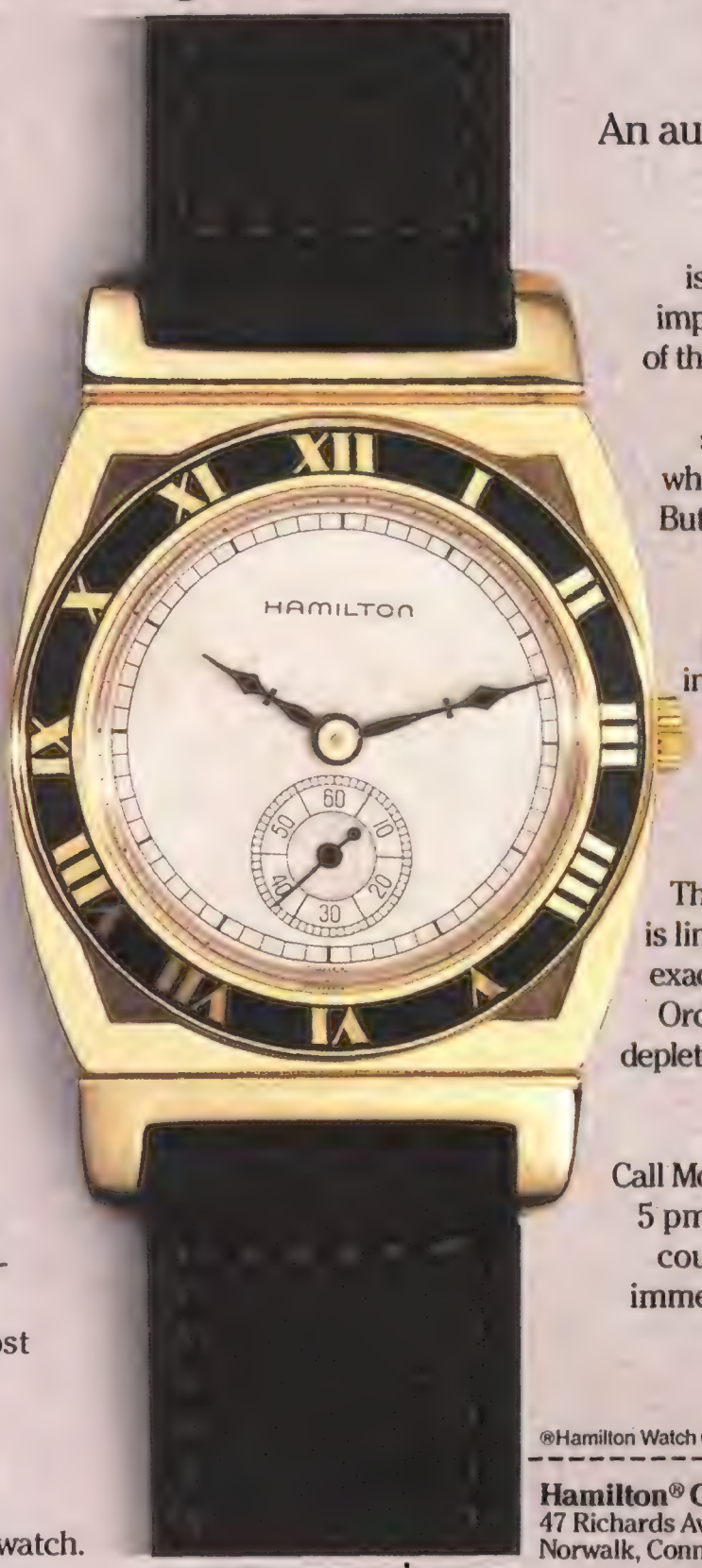

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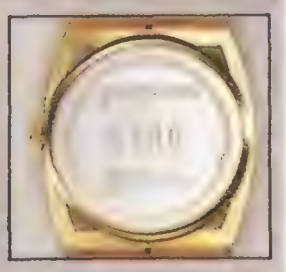

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Men who fought at the Bloody Angle couldn't get over the sheer masses of bullets fired there. According to one account of the battle, one of the two artillerymen to survive the hand-to-hand fight, of 24 who went in, reported that "twenty-seven balls passed through the lid of the limber-chest. . . . The sponge-bucket on my gun had thirty-nine holes in it, being perforated like a sieve. The force of the balls can be imagined when I say that the bucket was made of one-eighth-inch iron."

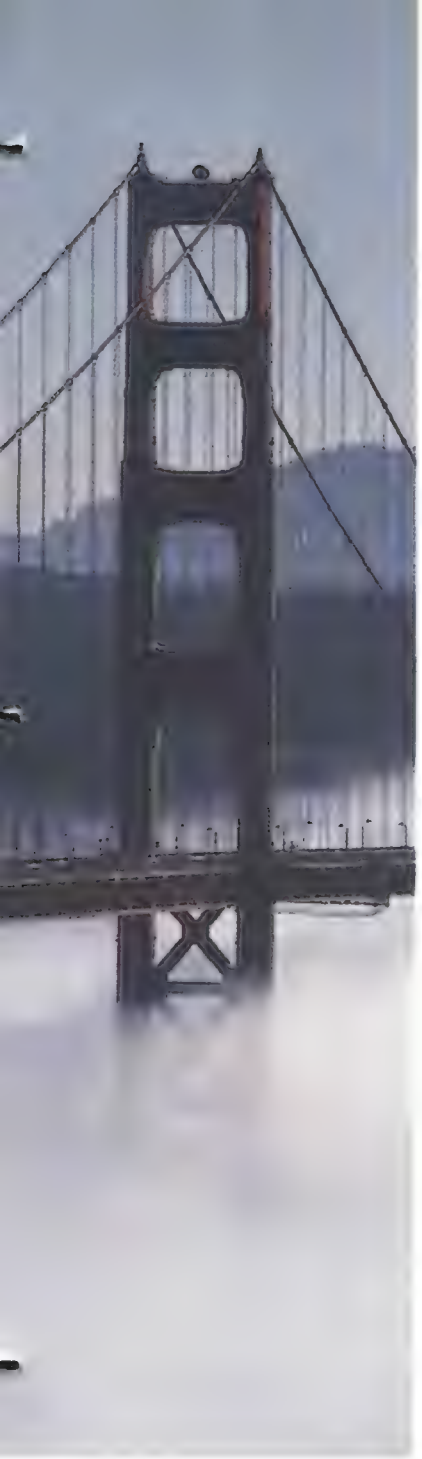
Last month I spent some time looking at the Bloody Angle stump. I remembered the hazy summer day the year before, when I had visited Spotsylvania and had seen the place where the tree stood, and had followed the lines of the Confederate salient, known because of its shape as the Mule Shoe, a mile deep and not much more than a half-mile wide. The Bloody Angle itself turned out to be such a small piece of ground, its parapet blurred and softened and greened by the years, that I could not connect it, or any of this quiet, rural landscape, to the noise, shock and horror of an actual battle.

Visiting the museum, I stood for a long time looking at the stump, which is displayed, appropriately enough, between cases of Union and Confederate rifles. My eye ran slowly over those gnawed tag ends of wood, bristling like broom straws, and the places where a bullet had driven an inch into the solid wood, then had been jammed in another inch by a bullet coming directly behind it, bursting the wood, leaving a tiny lion's ruff of shattered splinters in a ring around the thumb-size entry hole.

And slowly some of the fury came through. Look long enough and you can begin to half hear shouts and screams, the roaring crackle of those thousands upon thousands of rifles, the deeper thunder of bigger guns. You can imagine a man so wild with rage and exasperation and fear, after hours of fighting in place, that he leaps onto the parapet and shoots down into the crowd of enemies, all but touching them with his rifle muzzle.

This ugly, mutilated thing was there, that lost day 125 years ago in the smoky woods of Virginia, a talisman if not a survivor of the famous battle, a startling reminder more graphic than the most vivid eyewitness account of that homespun, romanticized war—a war that haunts us still.

Michael Kernan



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Phenomena, comment and notes

Thirty-eight years later Aruba still looks pretty good—although most of a boyhood hometown has vanished

For years I have had a fantasy about returning places to the wild, taking down houses and taking up streets, letting Nature come back at her own pace and in her own way, so that in ten years or a hundred or a thousand no one could ever tell we humans had once been there manufacturing, consuming, amusing ourselves.

In all those hours of daydreaming, often about Manhattan as a new Eden (*Phenomena*, September 1982), it never occurred to me that they would start with my house, my street, what was the very center of the Universe when I was discovering variable stars, bird guides, darkroom magic and the far more magical fact that girls are indeed different from boys. But turn my back for a trifling 38 years and wham! Look what they've done. Bungalow No. 415 is gone. The street it was on is gone. So is half the town. Crested caracaras now stalk through the cactus where children once played on manicured patios.

You come into this particular town from the north. After seven or eight blocks, in my day, you came to the top of a hill with a church on your left and the lagoon in front of you. Down the hill is the beach. We are not talking Los Angeles here. So my friend and I came flying into town in our rusty rental car one day last March. We pulled to a halt at the first stop sign. And there, across the street on our left, was the church. Straight ahead was the lagoon. We had missed most of the town because it no longer exists.

The rabbits are reclaiming what was theirs. Iguanas scuttle into the thornbushes, parakeets scream like green rockets through the organpipe cactus. I should be rejoicing. Part of me is. But where are the school, the commissary, the ball field. Where is my youth?

This once was Lago Colony on the Dutch island of Aruba. The refinery—and the company town—were owned by the Lago Oil and Transport Company, eventually a subsidiary of what is now Exxon. Once the refinery was one of the largest in the world, the port of Sint Nicholaas one of the busiest. But in 1985 the refinery closed for good. Now Lago, or Exxon, would appear to be in the restoration-ecology business. Not only are the streets being taken up, but a sign at the entrance to the colony announces that the whole place is a sanctuary and neither animals nor plants are to be disturbed.

Some traces of a boy's world remain. The last house we lived in is still there, windows boarded up, yard overgrown. A tree now covers the garage from whose roof I watched the stars; hummingbirds have built a nest in the bottom branch of another tree that now blocks the back door. Other pieces still stand. The Esso Club is still down by the water, on a point between two lagoons. The tennis courts are still there, and a snack bar on the beach where the "yacht club" once stood. The golf club is still going strong, sold to its members for one guilder. But it was monumentally disorienting to drive around a small, familiar town, looking for friends' houses and other childhood landmarks, and not be able to find them because they have ceased to exist.

It was discombobulating enough for me that we spent the next three days away from Lago, driving around the rest of Aruba. A 19-mile-long volcanic island encrusted with laminations of long-dead coral reefs, it lies athwart the northeast trades. On the windward side, the surf blasts holes in the coral cliffs; on the other, mangrove-lined lagoons doze under the painful sun. Indians crossed the 20 miles from Venezuela 4,500 years ago and gathered shellfish in leeward lagoons while, as a brochure from Aruba's archaeological museum puts it, "at the windward side some real fishermen lived." There is a lot to see, despite the *Denver Post* travel writer who called Aruba "the world's ugliest island. This place is so devoid of any-

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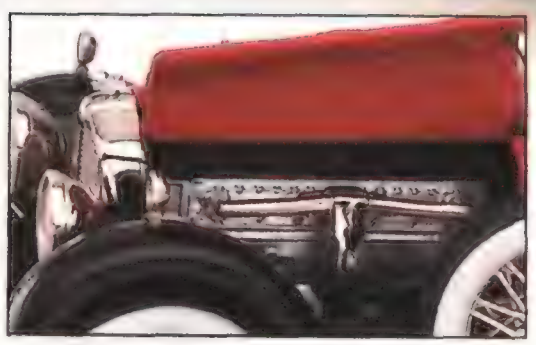

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The lighthouse at Aruba's California Point breaks the desolate landscape of the north coast, where "real fishermen lived."

thing to do," Michael Carlton went on, "that even Gilligan would flee." Luckily I knew that already, so I was able to ignore the wind surfers jumping the breakers at Boca Grandi, golfers staring down burrowing owls in the sand traps at the Aruba Golf Club, snorkelers mixing it up with French angelfish and sergeant majors in the staghorn coral off Baby Lagoon, the sailors anchoring off Malmok for a picnic on a miles-long beach, binocular-laden eccentrics counting wood storks at Bubali or parakeets in Frenchman's Pass, time travelers pondering birds and fish the Indians painted on the rocks in what is now Arikok National Park.

Because there was nothing to do, my friend and I walked through the dunes to the cliffs of California Point, past the stone huts of today's real fishermen and the crosses cemented to the rocks in memory of the drowned. We drove between the edge of the cliffs and enormous piles of broken rock down the coast to Alto Vista, where the first Catholic mission meant the beginning of the end for the Indians. We drove out through Santa Cruz and the national park to the coast, to find a triple natural bridge above the surf, and back through Andicuri, a coconut palm plantation thought to carry the name of an Indian chieftain. We climbed the crumbling concrete steps of Hooiberg ("the haystack," a conical hill at the center of the island) and the red rock of Seroe Colorado, the lighthouse hill at the southeastern end that looks down on what is left of Lago.

At Boca Prins, in a valley behind a break in the cliffs where a boy camped 40 years ago, we met an American, ecstatic that he had left his asthma back in Washington; and an Aruban casino dealer, ecstatic at the prospect of his upcoming trip to Las Vegas. Another Aruban, just back from the Netherlands, had spent the day on the cliff above us staring at his indigo sea. We met more Arubans, eager to help in four languages, while looking in Siribana for the house of a classmate from long ago. (We finally did find her house, but not her, in S*h*iribana.)

On the south side we drove the beaches, walked the mangroves, swam in green water on pink sand. We drank beer in the rum shops, and ate beef croquettes and chicken pastries in the bakeries of Sint Nicolaas. We ordered *nasi goreng* (Indonesian fried rice) one day in Oranjestad as frigate birds soared over the boats that bring fresh produce from Venezuela; later we dined on fresh fish (caught from the boat tied up next to our table) as the sun set over Spanish Lagoon. We tried the goat stew in an Aruban house, and sipped iguana soup and rum beneath the watapana and kwihi trees while the yellow satin and white linen of the Aruba Dance Theater swirled under the stars. Then back to the hotel, huge clouds sailing right over our heads, stars burning in the gaps, the warm, soft wind almost itself alive, bringing bird noises from the wetlands sanctuary next door.

By the end of the week we were back in Lago, swimming in the lagoons, having a beer in the bowling alley at the Esso Club, even playing a round of golf for old-times' sake. I walked the aboveground sewer pipe along the shore of the lagoon, looking for the iguanas that used to leap into the water and hide under the rocks; those I found headed uphill instead.

"One Happy Island," the license plates say, and it really seems to be, remarkably so. Physically, however, I must confess to my Colorado colleague, it is not quite paradise. Things are tough in the best of times on this island, and the past 500 years have not been the best of times. Average rainfall is only about 17 inches, usually in quick downpours from October to December. Plants that do get a start face the salt-laden trade winds. The first Europeans cut down the dyewood trees, and introduced the goats and sheep that are causing murderous soil erosion to this day. Although it is hard to believe, looking at today's landscape of cactus and bare dirt, the entire island was once used as a horse-raising station. While still under Spanish rule, the island was a source of Indians for slave labor in the mines of Hispaniola. Gold was discovered in the 19th century; parts of the island were ripped up in the frenzy. Now, stone quarries and sand and gravel pits scar the land everywhere as the hotel building boom goes on.

A new fantasy takes shape. It is night. A small, twin-engine plane flies low over the sea, without lights. It lands at the old Aruba Flying Club, whose X-painted runway now heads straight for the new prison. A man jumps out of the plane with a rucksack full of old coffee cans. He runs off into the cactus and thornbushes, drops to his knees and tears open the pack. He pulls the lids off the cans, dumps their contents on the ground. Then he runs, crouched, back to the aircraft; the plane leaps off the runway and up into the wind, and disappears back over the sea. Police cars come screaming up; cursing men, with flashlights, fan out into the brush. One yells and the others converge: there in the beams of their lights is a dark mass of wet topsoil, compost and rich loam from an old vegetable garden. The phantom island restorer has struck again.

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Buckle up for safety.

By Doug Stewart

The buck starts here, and may stop here, at the nation's money mills

Bills and coins have design-review committees,
life spans, shortages, even factory seconds,
but never are they marked down for quick sale

"You'd be surprised at the number of people who do not believe in banks," Gracie Scruggs declares. Scruggs is a supervisor at the Bureau of Engraving and Printing in Washington, D.C., the factory that makes the nation's paper money. She's referring to people throughout the United States who hide money in mattresses. She knows they're out there because many of these individuals indulge in a second ill-advised habit: they smoke in bed. Incinerated mattresses arrive regularly at Scruggs' department, the Office of Currency Standards, where, as a free public service, specially trained currency examiners armed with tweezers, butter knives and knitting needles gingerly pick through the debris, searching for redeemable currency.

"We receive mutilated currency of all kinds," says Scruggs. "By 'mutilated' I mean buried, burned, torn, petrified, teargassed, chewed by animals and exposed to the secretions of decomposing bodies." A farmer once mailed in a cow's stomach; the examiners verified that it contained several hundred dollars. The examiners have pieced together money confetti sent in by a man who had hidden his savings in the barrel of a seldom-used shotgun. If they can patch together 51 percent of a bill, they redeem it. Fearful of destroying evidence that can back up their claims, citizens pull up to the loading dock downstairs with the burned contents of entire rooms—desks, filing cabinets and all. "Even if it's just white ash, you can still see the scrollwork on the paper," says Scruggs. "United States currency is made out of a paper that is never destroyed, I don't care what you do to it."

That's overstating the case somewhat, but the bureau clearly prides itself on putting out a superior product. No commonly handled manufactured goods are more painstakingly produced than are the nation's bills and coins. Yet few products are handled with such brutal disregard by consumers. We'd be shocked if a $20 bill tore when we crumpled it into a coat pocket, and we'd be outraged if the ink ran when we put it through the wash. We expect cash to be durable, plentiful and genuine (though we never check to see). If a bill or coin shortage occurred, we'd probably blame government planners, not the international black market's reliance on the dollar, and certainly not the millions of overflowing penny jars perched on dresser tops from coast to coast.

Money—the ticket to the good life, the love of which is the root of all evil—is not normally viewed as a mere manufactured commodity. But to the two huge money factories charged with keeping us all in pocket money,

Burned, buried and oil-soaked, currency arrives at the Bureau of Engraving and Printing for replacement.

Photographs by Kay Chernush

The buck starts, and may stop, here

A stack of 10,000 sheets of $100 bills, ready for examining and cutting, is worth a cool $32 million.

the United States Mint and the Bureau of Engraving and Printing, that's exactly what money is. In many ways the production of cash is like that of shoes or skis or playing cards. Coins and paper money have design-review committees, physical life spans, sudden shortages and occasional factory seconds, although under no circumstances are the latter marked down for quick sale. The money business even has its share of marketing fiascos. There exists a locked storage area that is currently weighed down with 334 million Susan B. Anthony dollars. The Edsels of modern coinage, they are too unpopular to circulate and too valuable to melt down.

In other ways, of course, producing money is not a bit like producing playing cards or shoes. In the case of paper money, the distinctive feature is its markup. A $1 bill costs only 2½ cents to make. A $100 bill costs the same. As a result, security at the Bureau of Engraving and Printing is tighter than a military command post.

The bureau's 27-acre facility has 400 closed-circuit video cameras, several thousand alarms, an army of security officers who make strong eye contact, and a noticeable absence of windows. One of the few high-security areas that does have windows is the engraving department, where skylights let the bureau's 14 engravers work by natural light. The only newly engraved piece of U.S. currency issued in the past 60 years was the short-lived $2 bill, introduced in 1976, so the engravers tend to concentrate on other media, from postage stamps to White House invitations, along with keeping currency dies in repair.

A portrait from dots, dashes and lines

"We have the largest in-house staff of engravers here in the country," says Hugh Kasley, the department foreman, a relaxed, avuncular man with impeccably trimmed gray hair. "If you wanted to make counterfeit money, the best group to do it would be right here." Bank note engravers cut patterns in quarter-inch-thick steel plates using antique, hand-held styluses called gravers. Every image is composed of hand-cut dots, dashes and lines. Viewed up close, George Washington on the $1 bill looks like a tattooed Maori warrior. A strict division of labor—some engravers do portraits, some do scrollwork, some do only lettering—makes the handcrafting of competing dollar bills tougher for the occasional "free-lancer" to accomplish alone.

Kasley estimates that just the portrait of Andrew Jackson on the twenty took its engraver a good two months to do. Larger engravings take longer. Working from a photograph, picture engraver Tom Hipschen recently spent 500 hours on President Reagan's official portrait, a 3-by-5-inch masterpiece of incised steel. The only way engravers can correct a misplaced line is to

Engraver skillfully cuts away steel on a plate using hand-held graver, leaving grooves that will hold ink.

At Philadelphia Mint, sculptor-engraver applies beeswax and kerosene to plaster mold before casting.

hammer the back of the steel die after the unwanted portion has been ground out. "With President Carter," says Kasley, "we engraved the portrait the White House gave us; then they decided they didn't like the necktie." He says this quietly, his voice filled with wonder. "We had to alter the whole tie from behind—just take it out."

An engraved plate applies ink to paper by a process known as intaglio printing. In a well-guarded basement pressroom, plate-printing foreman Bob Harry leads me up onto a narrow walkway atop one of the bureau's huge presses to show me how it's done. Below us, the press is thumping out a steady cascade of $10 bills in sheets of 32. Four working plates, made from copies of the original engravings, have been wrapped around a spinning drum. Each time the drum turns, three things happen in quick succession: the plates are smeared with hot gummy ink, their surfaces are wiped clean (leaving ink only in the cuts), then a sheet of paper is squeezed against the plate. The squeezing amounts to 25 or more tons per square inch, sufficient to force the ink onto the sheets in sticky, glistening mounds—mounds high enough to let some spenders recognize denominations by feel. As I watch, sheet after sheet of tens, green side up, floats gently down onto a growing stack. It's a lovely sight.

"We're printing over six billion notes a year now," says Harry as we climb down. A small sign on a nearby press reads: THE BUCK STARTS HERE. "In the late 1970s," he says, "we printed less than three billion a year." Inflation has played a part, but Harry attributes the growing popularity of greenbacks to other factors: dollar changers on vending machines, cash-only fast-food restaurants and the hunger of automatic banking machines for crisp new bills. To keep up with demand, the bureau now keeps its 14 currency presses running day and night, often seven days a week.

Harry pulls the top sheet from a five-foot stack of blank currency paper that awaits its moment of glory. The paper is made specially for the bureau by a Massachusetts papermaker, Crane & Company Inc., and is shipped to Washington by armored truck. Possession of the blank paper by outsiders is a federal crime. Possession of paper that even *looks* like currency paper is a federal crime. Genuine currency paper is one-quarter linen and three-quarters cotton, with a few tiny red and blue fibers added to the mix to make imitation that much harder. Scraps and cuttings from clothing manufacturers are a key ingredient of Crane's recipe. I comment that the paper, for all the care taken in its manufacture, looks better after it's printed. "Yeah," says Harry, "it looks a *whole* lot better after it's printed."

Like all printshops, this one has its share of slipups. Harry recalls the time they printed $1 backs on $5 faces, but the error was caught before the sheets went out. "I can only wonder what the value of those $6 bills would have been," he says. Most mistakes are less dramatic but equally unacceptable to the 176 members of the bureau's examining department. I step into a large room down the hall, where examiners stare at uncut

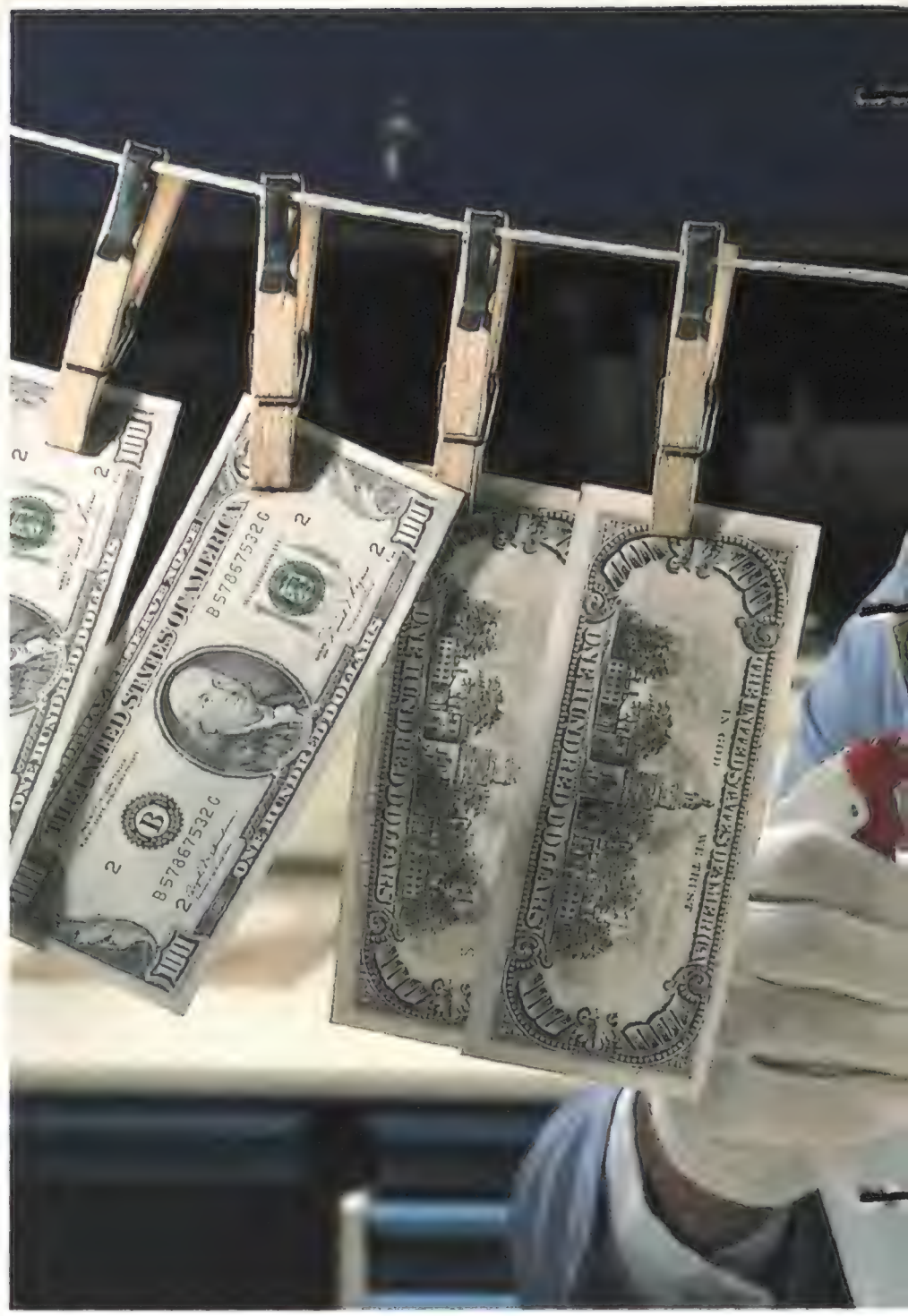
Finding latent fingerprints with the use of heat and humidity may lead Secret Service to counterfeiters.

sheets of tens as they flow through the room on conveyor belts. The only person moving is a woman in the back who is busy pulling every fourth sheet as it passes. Earlier, a press crew had run off a load of sheets without noticing a blank patch on one of the portraits of Alexander Hamilton, just behind his left ear. To a collector, the affected sheets are to die for. To an examiner, they're just junk.

The sheets that pass muster are cut down to size; then letterpresses add serial numbers, and Treasury and federal seals. The finished notes are bundled into 4,000-note "bricks" and shrink-wrapped in plastic, ready for shipping. "When we're printing $100 bills," says packaging expert Will Groomes, hefting a $40,000 brick of tens in one hand, "then we're talking about $400,000 right here." Several weeks a year, he says, the bureau prints $100 bills around the clock. At those times, a three-foot-high skid of bricks is worth $32 million, enough to found a university or two. "If you think of it as money," says Groomes, "you'll go crazy. So you have to think of this as a product, like shampoo."

As for spoilage, it is not, understandably, tossed into a dumpster in the parking lot. Its destination is a bunkerlike concrete room in the building's subbasement. There, I watch William Moore, a cheerful fellow in grimy work clothes, grab 32-note sheets by the fistful and heave them under a slowly turning drum covered with spikes. The sheets emerge on the other side of the drum in tatters and drop into an enormous well in the center of the room. The walls of the well

The author is a Massachusetts writer and frequent contributor to SMITHSONIAN. *He has recently written about satellites, rock quarries and portrait artists.*



To isolate fingerprints, a technician sprays notes with chemical that will turn telltale prints magenta.

slant inward to form a funnel down which Moore's security supervisor, Matthew Stevens, is stuffing pulverized currency with a 20-foot pole. Directly below the chute is a waste-fueled boiler, and the room around us reverberates with the roar of its fire. In 1988, the boiler destroyed close to 2,000 tons of currency and securities, generating enough steam to heat one-fifth of the bureau's buildings all winter long. Moore laughs when I ask him if it makes him sad to be destroying all this money. It would make him sadder, he assures me, not to receive his paycheck.

The volume of spoiled currency the bureau destroys is small change compared with the amount of worn-out bills that have to be done away with annually. If you made a neat stack of just the $1 bills that are destroyed each year, it would rise almost 200 miles. The task falls to the country's 12 Federal Reserve Banks. Each of them regulates the flow of cash in its region, accepting excess or worn-out bills from local

Pictures were taken in agency's Forensic Services Lab, which analyzes false documents, examines evidence.

banks and doling out notes fresh from Washington as needed. High-speed sorting machines shred any bill on the spot if it is too limp, too faded, too creased or generally too abused to be of further service. The sorters also detect counterfeits (by measuring the iron content of the ink, then examining the brightness of the bill along a particular strip). Evidence of a crime, counterfeits are not destroyed. Instead, they're sent to Secret Service headquarters in Washington, where two walls of filing cabinets hold four samples of every batch of counterfeit money ever seized. The inventory is growing rapidly.

"Most counterfeiters take a picture of a genuine bill, then make an offset plate from the negative," says Special Agent Pete Smoot at the agency's G Street offices, just down the block from the White House. Smoot opens and closes drawers of counterfeits as he talks, searching out his favorites among the 13,000 varieties on hand. He hands me a good-looking

Here, a laser fluoresces notes; goggles filter out laser light so that worker sees only glowing fingerprints.

twenty, sharp and crinkly. The cross-hatching around Andrew Jackson's head is as clear as a window screen. On both sides of the bill, tiny red and blue fibers have simply been printed right on the paper, a little trick that took somebody four separate pressruns. "Some counterfeiters draw them in," says Smoot, "and I've seen bills where the counterfeiters had cut real pieces of thread and tried to glue them on."

Though best known for protecting Presidents, the U.S. Secret Service first set up shop in 1865 specifically to combat counterfeiting. At the time, between one-third and one-half of all paper money in circulation was thought to be phony. That proportion has dropped considerably, but seizures are up nonetheless—way up. Thanks largely to better cameras and better presses, counterfeiting is a growth industry. More than 100 million counterfeit dollars were seized last year, more than double the 1975 total. The three all-time biggest busts occurred in 1988. The largest, $24.3 million, took place in Los Angeles the week before my visit. Back on G Street, in a windowless storeroom next to the file room, cardboard cartons of recently confiscated money crowd rows and rows of gray steel shelves. "I can't even tell you how much money is in here," says Pete Smoot. "Zillions."

Smoot has been a Secret Service agent for 17 years, and he obviously delights in the cops-and-robbers aspect of his profession. With the upbeat boyishness of a popular high school teacher, he says things to his colleagues like "When did that caper go down?" In the archive room, Smoot opens a file drawer at random and produces a sorry-looking twenty, just a photocopy on cheap paper. "Stuff like this gets passed all the time," he says. From the Reno office, where he worked

Special blanks dried in vibrating tub of ground corncobs, under a heat lamp, have fewer scratches and are shinier than mass-dried general-circulation coins. These are stamped, then sold to collectors.

until recently, he investigated a case where photocopies of $1 bills were turning up in a dollar-changing machine at a Carson City video arcade. Adjoining the arcade was a copy center. "It turned out a whole gang of little kids were making copies of dollar bills, walking over and putting the copies in the dollar changer, then buying soda and arcade games with the change," says Smoot. A good change machine wouldn't be fooled, he says, but arcades and laundromats often can't afford good change machines. Slot-machine slugs were another low-tech caper that used to keep Smoot busy in Nevada. "We'd catch these guys out in the sagebrush with their Coleman stoves, melting down lead and pouring it into handmade molds for Eisenhower dollars," he says. Ike may not have looked too lifelike, but the slot machines didn't care.

The most exquisite counterfeit money Smoot and his fellow agents ever saw came from an artisan in Thailand named Lee Ah Sin, aka King Kong, and from a solo artist in Southern California, Marion Williams. Both men used the time-consuming intaglio method of printing. King Kong, the protégé of a Hong Kong master known as Professor Wong, is thought to have passed at least $2.5 million of homemade money before his arrest in 1985.

Marion Williams' tabletop operation was far humbler, producing perhaps $15,000 a year. At the time of his arrest in 1974, Williams—or Marion, as Smoot and his colleagues fondly refer to him—was a 77-year-old recluse suffering from cataracts, hernias and alcoholism. "What finally did him in," says Smoot, "is that he took in a boarder who got curious about a locked room in the house. The boarder broke his way in, found all this money and took some that Marion would never have passed—it probably hadn't passed his quality control." The boarder was nabbed right away and promptly squealed on his landlord. Williams' apparatus now rests in a display case with the Counterfeit Division on the seventh floor of Secret Service headquarters. In it are an old box camera, a container of Rit shoe dye, a bottle of Jack Daniels ("To keep him going," says an agent) and a beautiful $20 bill. Williams' technique was arduous but clever. He would build up photographic emulsions on a small plate of

glass until the pattern was almost as deeply etched as a steel engraving. Then, using the shoe dye as ink, he would squeeze glass and paper through an old, hand-cranked laundry wringer, one note at a time.

The Secret Service investigates coin swindles as well. In the agency's spotless forensic laboratory, technical analyst Jim Brown hands me an 1879 Morgan silver dollar. On its face are two tiny raised letters, "CC," for Carson City. "Without that mint mark," says Brown, "the coin is worth about $17. With the CC, the coin's worth $2,500." He pops the silver dollar into the vacuum chamber of a scanning electron microscope on a desktop in front of us. Two luminous, green Cs appear on the machine's video screen. Magnified 20 times, they seem like perfectly innocent, flattop mounds. Brown ups the magnification to 200. "Look at that," he says. "You already know something's rotten in Denmark." The raised letters now resemble pancakes on a plate: a deep, dark crack runs around the base of the letters. Brown boosts the magnification to 500 and the pancakes appear to be levitating clear off the plate. Some ne'er-do-well, he suggests, managed to file the mint mark off a less valuable Carson City dollar and affix it to this one. Quite a scam, I say. "There's a million of them," says Pete Smoot.

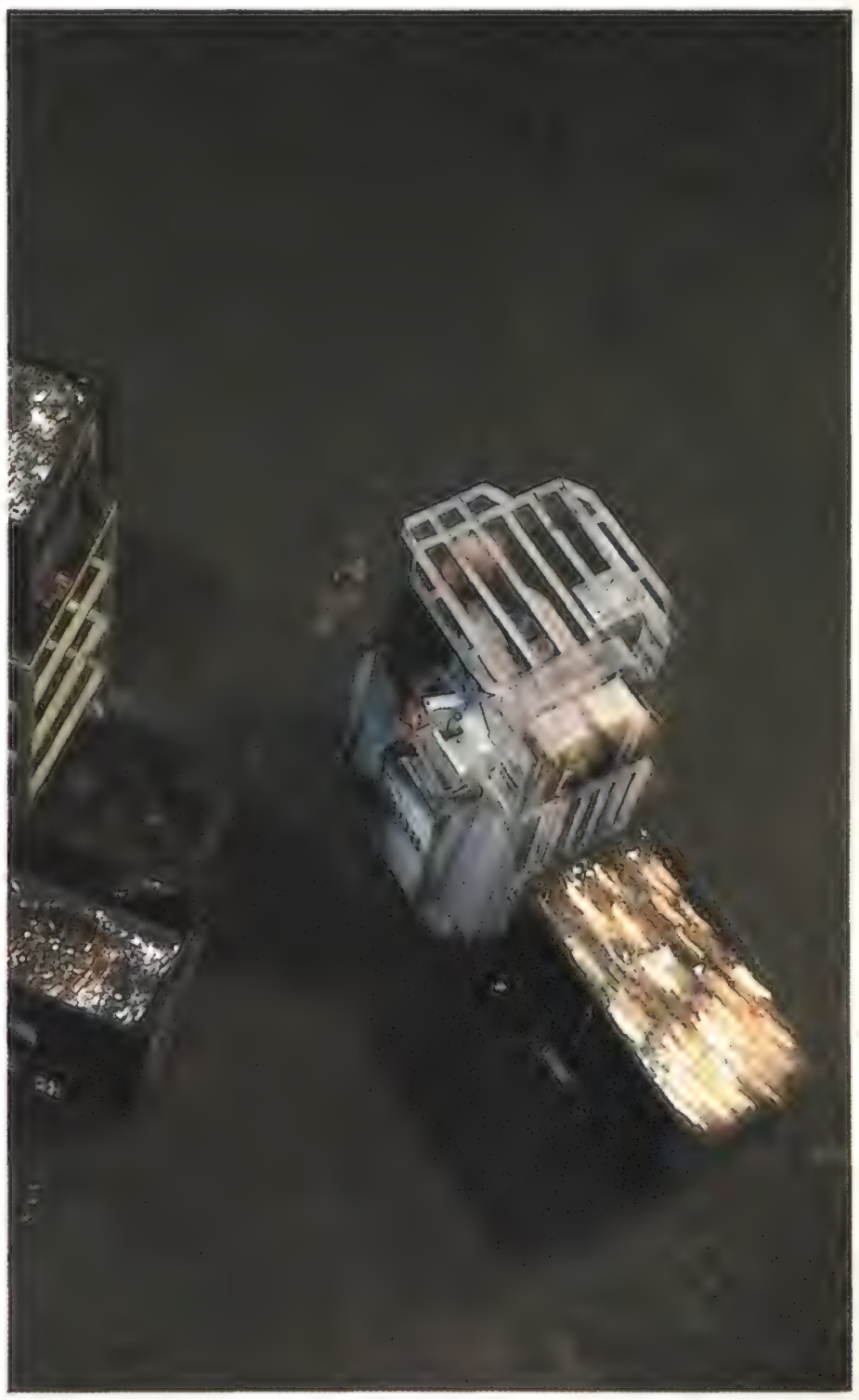
As the Carson City coin caper illustrates, a numismatically inclined criminal can make just as much money from altered coins as from homemade bills. For this reason, security at the government's two factories for general-circulation coins, the Philadelphia Mint and the Denver Mint, is as tight as if they were stamping out gold doubloons, not pocket money. When I visit the Philadelphia Mint, a police officer asks me to set aside not only all my change but also my shoes, my glasses and my wallet before passing through a metal detector. The device is so sensitive that shoelace eyelets, screws in eyeglass temples and magnetic strips on credit cards will all set it off. The idea is to impede anyone from sneaking out with a misstruck penny, or even a penny blank, both of them eagerly sought by collectors.

Off-center, Abe Lincoln is condemned

The Philadelphia Mint has a decidedly unglamorous, blue-collar feel. At one end of the shop floor, blanking presses punch out coin-size disks, like tiny cookies, from long strips of metal alloy. Nearby, the round blanks are heated and rolled under pressure, which gives them rims. At the other end of the cavernous room, dozens of automated coin presses pound the blanks with several tons of pressure, heads and tails at the same time, transforming them into legal tender. At one of the presses, an inspector with a loupe tosses an off-center penny—Abe Lincoln seems to be gazing at a new moon—into a bin that's marked CONDEMNED.

What sets this factory apart from other assembly-line operations, aside from all the security, is the glinting, gleaming product. As I wander the floor, I'm surrounded by jiggling chutes and swirling trays of shiny treasure. A mint worker with a shovel and a rag reaches into a large canvas bin to smooth out a glittering mountain of blanks with a proprietary sweep of his hand, a pirate admiring his booty. Underfoot, the pitted concrete floor is littered with hundreds of sparkling blanks. All around me, creeping rivers of coins drop endlessly from conveyor belts into large bins in a perpetual jackpot, a Las Vegas gambler's dream-nightmare.

The factory produces 35 million coins a day. Three-



Platform truck removes shiny blanks from a mill where they were rolled and pressed on edge to raise a rim.

Frank Gasparro, former chief engraver at the mint, continues to do medallion work in his own studio.

fourths of them are pennies. Doing away with all this penny making altogether might seem like a sensible way to save the federal government some money. Mint spokeswoman Eleanor McElvey points out, however, that pennies retail for one cent but cost the mint only six-tenths of a cent to make. The 50-cent piece, the highest-denomination coin the mint makes, costs a nickel to produce. "We come out ahead with every piece we make," McElvey says. The mint's total return, she notes, which includes income from commemorative coins, proof sets and other collectibles, amounts to several hundred million dollars a year.

A cramped corner studio on an upper floor is the workspace of the mint's sculptor-engravers. American citizens are notoriously resistant to new designs for money, as sponsors of the $2 bill and the Susan B. Anthony dollar quickly learned, so the sculptor-engravers spend most of their time on commemorative and presentational medals. I notice an exception on a tabletop in one corner, a plaster bas-relief of George Washington the size of a dinner plate. Taped to the top is a handwritten sign: FRAGILE! "This is the original model for the 1932 quarter," says Edgar Steever, 76, one of several old-timers in the shop. The plaster model is rolled out every year for a date change, he explains. The final "8" in "1988" has just been scraped off, and a carefully fashioned clay "9" stuck in its place. A series of molds will be taken from this original to yield the new year's working dies.

A more unusual mint heirloom is Peter, a stuffed bald eagle that overlooks the mint's lobby from a Plexiglas case. According to mint lore, Peter was a domesticated eagle that nested in the mint in the early 1800s, occasionally posing for new coins. He met his end when he caught a wing in a huge coining-press flywheel. By some accounts, Peter continued to pose for coins after his visit to the taxidermist.

The only person still living to have sculpted an entire general-circulation U.S. coin, eagle and all, is Frank Gasparro (left), who retired as chief engraver of the mint in 1981. A short, animated 79-year-old with emphatic eyebrows, a crumpled necktie and a Jimmy Durante profile, Gasparro still does medallion work in an immaculate private studio a mile away from the Philadelphia Mint. He designed the Eisenhower and Anthony dollars, and he engraved the "tails" sides of both the 1959 penny and the 1964 Kennedy half-dollar. He also designed a two-cent piece for the mint in the late 1970s—"It was smaller than a penny, larger than a dime, with just a big '2' on it," he says—but the Treasury Department dropped the idea.

Gasparro is an excitable man and nothing seems to thrill him more than the subject of coin making. As a 12-year-old apprentice sculptor, he saw a medallion being sculpted and found the experience "more exciting than a baseball game." When getting change, he has been known to show cashiers the back of a penny and announce he designed it. "They'd look at me like I was crazy, so I don't do it anymore," he says. I ask Gasparro if he signed his work. "Sure, I'll show you." He fishes around in his pocket and pulls out a penny. "Here's my 'FG' right here," he says, pointing to the bottom right corner of the Lincoln Memorial. It occurs to me that few other artists in the country could show me objects from their oeuvre by reaching into a pocket—or a guest's pocket, for that matter.

Gasparro is well aware that most people think of coins (when they think about them at all) as tokens of exchange, not portable sculptures. I ask him if he thinks the penny will ever be abolished. "No way. There's a psychology to it. The 99-cent sale—people want that penny back!" Do you? I ask. "Sure I do!" Moreover, he says, he always keeps an eye out for pennies when he walks down the street. "I do it for sentimental reasons," he says, laughing. "I find more pennies than anybody."

Defective currency is churned and then destroyed. To a collector, these bills could be worth a fortune.

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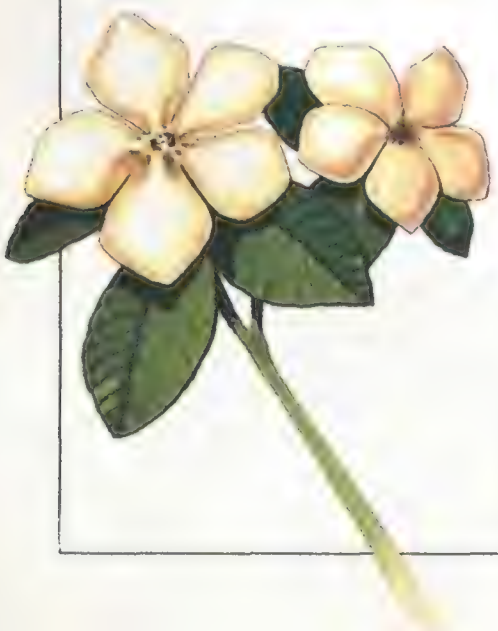

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By Donald Dale Jackson

When 20 million tons of water flooded Johnstown

Terror, heroism and 2,209 deaths resulted as the roaring waters tossed locomotives and houses around like so much kindling

The Johnstown Flood—the words seem matted together, inseparable. Johnstown means flood and seemingly always has. The calamity that befell this pathetically vulnerable little western-Pennsylvania city a century ago this month was the worst peacetime disaster Americans had yet suffered. The deluge that swamped the Conemaugh Valley when a rain-swollen man-made lake burst through a weak dam also stunned and shocked Americans in a way that few catastrophes before or since have done.

Even now the scale of the great flood of Friday, May 31, 1889, overwhelms the imagination: 20 million tons of water roaring down an Allegheny valley that drops 400 feet to Johnstown at the valley floor. An inland tidal wave carrying enough water to make a river 500 feet wide and 20 feet deep for 14 miles, which is more or less what it did. Thundering down the valley, toppling bridges, collapsing brick buildings, plucking locomotives and boxcars from tracks, the flood laid waste to Johnstown and several neighboring towns in a little over an hour. It killed 2,209, nearly three times the toll of the great San Francisco earthquake in 1906. It left the country aghast.

The flood was the biggest news story in a generation, and the subject of an endless cascade of books,

Lithograph done shortly after the flood gave victims theatrical poses, but did not exaggerate the damage.

The Johnstown flood of 1889

Before dam broke (top), 450-acre Lake Conemaugh was man-made playground for the rich. Then everything was swept away, leaving only horror, desolation behind.

poems, ballads and lantern-slide shows. At a time when federal disaster relief didn't exist, Johnstown's recovery was achieved through one of the greatest private charity campaigns ever mounted. The American Red Cross, only recently founded, won renown as a national disaster relief agency for its work in Johnstown.

Because it was arguably avoidable, the flood also became a scandal, and because the lake that descended on gritty, industrial Johnstown was owned by a handful of rich men who used it as their private playground, the flood became a social and political symbol as well, reflecting the sharp class differences that persisted in America and the emergent populist current that challenged them.

It began when a fierce rainstorm struck western Pennsylvania late on May 30, just a few hours after Johnstown's Decoration Day parade had ended. By morning the relentless downpour had dropped nearly seven inches on the green, hogback hills that surround the city. Two streams draining those hills, the Little Conemaugh and Stony Creek, meet at Johnstown to form the Conemaugh River. Like hundreds of Eastern and Midwestern towns Johnstown sits on a floodplain, and the steep grade of the valley walls increases the risk. On the morning of the 31st the streams began to wash over their banks and inundate the lower parts of Johnstown. The water rose steadily as rain continued into the afternoon.

Floods had been a recurrent menace in Johnstown. And just recently, due to Man's incessant tampering with nature, they had struck even more frequently—seven times in the preceding eight years. The railroads and the steel mills had filled in large sections of the streams, narrowing the channels that bore the flood tides downriver. Timber cutting on the hillsides had increased the runoff. And worst of all there was the South Fork Dam, a 37-year-old earthen structure 14 miles above Johnstown on the South Fork tributary of the Little Conemaugh.

Hay and spruce boughs used as fill

The lake created by the dam, originally built as a reservoir, was later purchased by a group of Pittsburgh's wealthiest men and converted into a fishing resort complete with a hotel-like clubhouse, a fleet of boats and lavish "cottages." Prominent Pittsburgh industrialists such as Andrew Carnegie, Henry Clay Frick and Andrew Mellon were among the members of the exclusive South Fork Fishing and Hunting Club. The club had made some repairs on the deteriorating dam to create a fishing lake, but they were done without an engineer's supervision and the work was slipshod. Hay and spruce boughs had been used as fill, the capacity of the crucial spillway that siphoned off excess water

Photograph of lower half of Johnstown, taken a few months after the flood, shows clean sweep made along shores of Stony Creek and, beyond church steeples, the gap in the hills through which the water roared.

had been reduced, and the top of the dam sagged in the center. When they were done, the sportsmen had a lake that spread out over 450 acres and reached a depth of 70 feet. The South Fork Dam was a time bomb.

The men at the dam on the morning of the 31st watched anxiously as the enormous volume of water pouring into the lake raised its level at a rate of six inches an hour. When water began flowing over the crest of the dam and eroding its earthen face at midday, they knew it was only a matter of time. One man rode to the two-mile-distant village of South Fork with a warning, and the railroad telegrapher there sent a message alerting Johnstown. But tragically, when that and two subsequent warnings reached the city in the early afternoon, it was too late. Johnstowners, grown inured to rumors that the dam could break, had retreated to their attics. Now they were isolated and trapped by rising waters.

The dam gave way at 3:10 P.M. The water first slashed a ten-foot-wide notch in the top of the dam. Then the entire middle section caved in. The torrent spilled into the bed of the South Fork and climbed its sides, tearing trees out by the roots, and creating a cloud of dust and debris that whirled ahead of the flood. The wave smashed down the Little Conemaugh valley, churning up everything in its path. At one point, where the valley narrowed, the water reached a height of 89 feet (measured later by the flood lines); the consensus among witnesses to its awesome rush was that the wave was generally 30 to 40 feet high. The watchers at the dam stared dumbstruck as the entire two-mile-long lake emptied in 45 minutes.

Roaring frightfully and rolling over itself, surflike, the great wave plunged at a speed estimated variously at 20 to 40 miles an hour, billowing out and then hourglassing in where the valley does. It plowed through the streamside hamlet of Mineral Point, leveling half of its 32 houses and killing 16 residents. Directly ahead lay the larger settlement of East Conemaugh, where several Pennsylvania Railroad passenger trains, halted by washouts, were parked on sidings near a roundhouse full of engines and tenders.

Engineer John Hess, who would deservedly become one of many heroes of the Johnstown Flood, was at the controls of engine No. 1124 pulling a work train 500 yards above East Conemaugh, when he heard the flood coming—"like a hurricane through wooded country," he described the sound. Hess tied his train whistle open and shrieked into town moments ahead of the torrent, alerting hundreds of rail passengers and residents to the horror coming their way. Hess leaped out and ran home in time to get his family up the hillside.

Passengers on the stalled trains saw the onrushing mass of waterborne debris seconds after they heard Hess' whistle. To one of them it looked like "an advancing rotary wave of black water, 40 feet high,"

The author writes regularly for the magazine, and is the perpetrator of a recent Last Page about the joys and horrors of old baseball nicknames.

Flood hero, engineer John Hess (left) kept whistle blowing to warn townspeople of onrushing torrent.

Flood debris illustrated the tremendous power of the water, which tossed 50-ton locomotives about.

freighted with "huge tree trunks lolling in the air as they turned endwise and disappeared." Sprinting for the hill, the passengers had to get over a ten-foot-wide gulley filled with water; several fell in and were carried off; 22 passengers and a porter drowned scrambling for safety. The wave smacked into the brick roundhouse and snapped up 50-ton locomotives like they were toys.

John Hess' quick thinking was probably the reason a 6-year-old East Conemaugh girl named Elsie Shaffer lived through the flood. She also lived through the next century, never straying far from Johnstown, to become at 106 an alert and lively-eyed great-great-grandmother, now Elsie Frum (p. 60), and the last survivor of the flood with a vivid recollection of it.

"My father rushed into the house and grabbed my two sisters and me," she recalled recently. "He said, 'For God's sake, get out, the dam's broke.' We crossed a road and climbed a little grade and then it struck, just that quick, as fast as you could walk across this room. It looked like an ocean with waves and surf, but it was the roar I remember best—a rolling sound like thunder, but not like anything I've ever heard since. I think it took about an hour and a half for it to pass. I didn't hear the whistle but my dad did. I remember him talking about it and I believe that's what saved us."

Johnstown, three miles downstream, occupied a rough-sided triangle of land squeezed tight on two sides by the Little Conemaugh and Stony Creek, which merge at the northern point of the triangle. The main part of the city is no more than six blocks wide between the streams; hills cut by the narrow river valleys rise abruptly on all sides. Johnstown proper had a population of just over 10,000 in 1889, but another 20,000 lived in the satellite towns and boroughs strung along the rivers.

At 4:07, it slammed into Johnstown

Most of Johnstown was already under three to ten feet of water as the great wave came crashing and clattering toward it, and rain was still falling. Though the warnings from South Fork had reached a few people in town, most had no idea what was coming, and the water already in the streets made escape to the hills all but impossible. Many residents had moved to the second floor of their houses and were trying to make the best of it, among them a young mother named Mary Strayer who thought it was something of a lark to cook eggs in a tin cup over an upstairs oil lamp.

The 30-foot-high rumbling mass of water with its spinning, bobbing cargo of houses, trees, train cars, animals and screaming people slammed into Johnstown at 4:07. The grinding onslaught bowled over most buildings in the northern half of the city. Wood-frame

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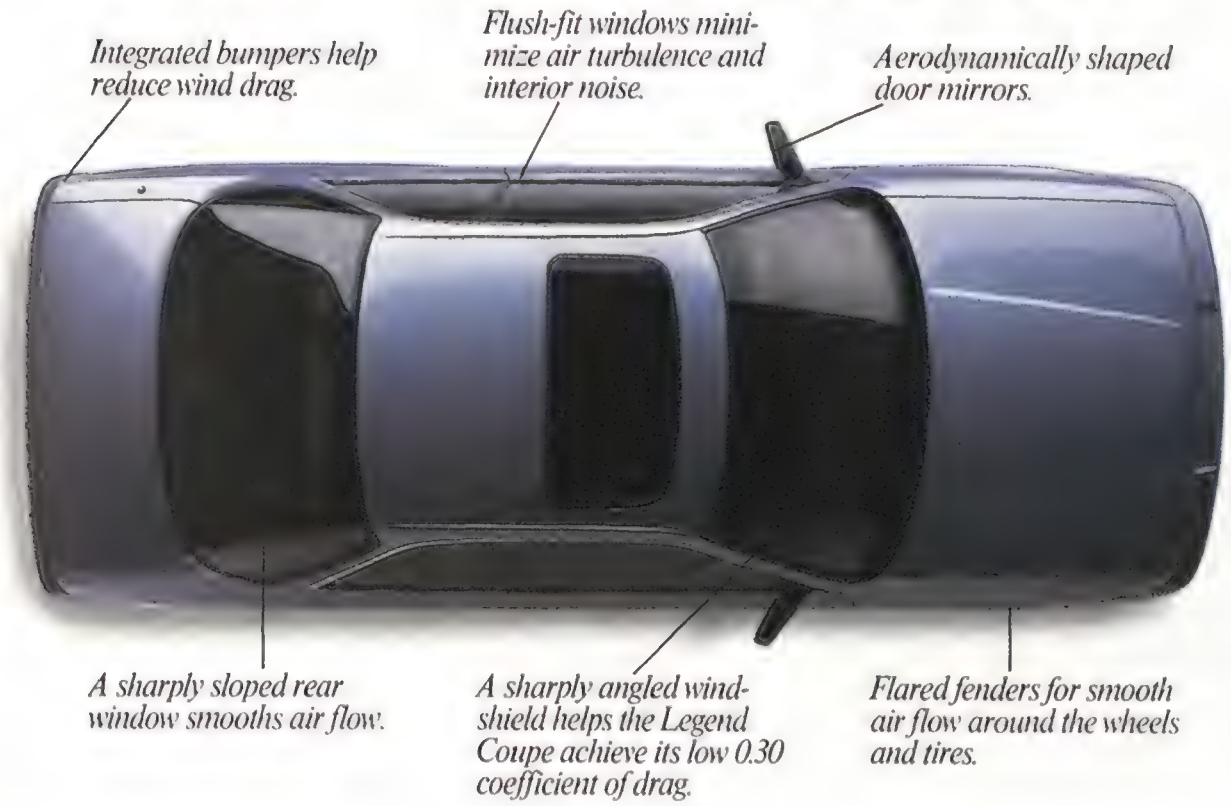
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Ruined house, one of 1,600 wrecked by flood, wound up grotesquely sprouting the trunk of a huge elm.

houses splintered; imposing brick buildings simply disintegrated.

Mary Strayer was knocked to the floor when a locomotive struck her house. Running to a window, she was horrified to see a mad torrent filled with people and animals rushing past. A large piece of wreckage that was jammed against her house held it steady long enough for Mary and her 4-year-old son to scramble onto the metal roof, where she was astonished to find 14 people hanging on desperately. The men snatched planks from the sea of debris and made a precarious catwalk over the wreckage, from roof to roof, across which Mary and others slowly picked their way until they reached a house that had withstood the awful tide.

People improvised furiously; some struggled and died. Alfred Easterbrook fought to save his wife and three children as his home broke into chunks. Two parts of the bobbing house pincered his daughter, but he managed to extricate her. Then he saw his younger son underwater. "I dragged him out," he recalled, "and saw my wife's hair floating on the water. I caught it and dragged her out." The Easterbrooks all escaped.

Tinsmith John Fenn and his family didn't fare as well. Fenn was killed two doors from home when a piece of timber hit him. His pregnant wife and seven children were trapped in their house as it floated on the current and filled with water. One by one, the children slipped away and drowned. Finally something tore a hole in the roof and wedged the house tight, and Mrs. Fenn crawled out. Her baby was born three weeks later, but survived only a few days.

The hundreds of private dramas played out in those few terrifying hours a century ago are remembered and retold by members of Johnstown families that go back that far. For Earl Glock, an attorney who traces his Johnstown roots to the mid-19th century, it's a tale of teenage sweethearts who survived the flood together and became his grandparents. "My grandmother's parents were killed in the flood along with two of their children," he says. "Their house was washed away. My grandmother was 16, and the family story is that her boyfriend, my grandfather Charles Glock, who was 19, rescued her and carried her to Green Hill where it was safe. They were married four months later."

A bizarre ride on the surging backwash

The whirling wall of water encountered its first major obstacle at the recently built stone railroad bridge just below the confluence of the two streams that bracketed Johnstown. All the upstream spans had collapsed, but the stone bridge held. Timbers, houses, railroad cars, makeshift rafts and machinery crashed to a stop there, temporarily blocking the path of the flood. In the next 20 minutes, before the water broke through an embankment at one end of the bridge and resumed its wild rush, the backwash surged up Stony Creek valley and back down again, engulfing the only parts of the city that had not yet felt the full impact. Lawyer James Walters was washed away on the roof of his house and whirled all over town before being pitched through the window of his own office several blocks away from home.

Floating houses and parts of houses, many loaded with people, smacked one after another into the jam of debris at the bridge when the flood tide resumed. Sometime around nightfall the debris at the bridge caught fire. Hundreds of people trapped in the wreckage, some with their arms or legs pinned, now faced the hideous prospect of waiting to burn to death.

Johnstown Flood survivors would never forget the screams from the blazing wreckage during the night. People beckoned piteously to would-be rescuers unable to get near them. A railroad man at the bridge said the victims were like "a lot of flies on flypaper, struggling to get away with no hope and no chance to save them." The fire raged for three days before it was put out. No one will ever know how many unfor-

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Johnstown's grimmest postflood shortage was coffins. Many had to be brought from faraway Pittsburgh.

Only structure to withstand flood was rugged stone railroad bridge spanning Conemaugh River, below city.

tunates died in the flames—the official estimate is 300.

Those who escaped both flood and fire spent the night in the few buildings stout enough to survive; they huddled in clusters on the dark hillsides, or in trees and brush where the deluge deposited them along downstream banks. The 264 survivors gathered in a brick building on the town's block-square central park elected floor commanders for the three floors they occupied. And they suffered through the terrible night without any certainty that the creaking building, with 10 to 20 feet of ugly water still lapping around it, would last until dawn.

When daybreak came the survivors got their first look at the muddy, wreckage-strewn wasteland Johnstown had become. An area roughly four miles square was ruined, much of it scraped clean. Blunt-nosed train engines protruded from the mud. Houses and shops lay every whichway. Of the city's 300 businesses, only 20 had avoided serious damage. "Where houses had stood was bare ground," Johnstown *Tribune* editor George Swank wrote, "or perhaps the wreck of a house that the day before had stood miles away. . . . Dead everywhere you went, their arms stretched above their heads almost without exception. . . . We might as well for the first hopeless, helpless hours have been in the Alps, with glaciers all about us, and crevasses, and death."

The agonizing work of finding the dead, identifying them where possible and burying them began immediately. A disproportionate number were children—the final figures showed that 45 percent of the victims whose ages were known were under 20. Ninety-nine entire families were wiped out; 565 youngsters lost one or both parents, as Earl Glock's grandmother had; 198 men became widowers overnight. The eventual toll of 2,209 included 755 who were never identified and scores who simply disappeared, many probably burned beyond recognition at the bridge.

By the next day, Sunday, June 2, railroad crews had repaired the tracks connecting Johnstown to Pittsburgh, 55 miles west. By then the press and the initial detachment of relief workers were in town, Americans were starting to read the first shrill dispatches from

Barns, houses, railroad cars, trees, timber, bodies all smashed against it, creating the debris shown here.

Displaced by calamity, rich and poor alike sought refuge in makeshift hovels in the nearby hills.

Johnstown and a cavalcade of help was on the way.

Newspapers first learned of the flood on the evening of the 31st. Reporters set out that night and arrived the next day after traveling the final miles by wagon or afoot. Newsmen had a wire to the outside by late Saturday, and in the two weeks that followed Western Union transmitted an average of 100,000 words a day from the stricken city.

With the number of victims still unknown, different papers reported death tolls of 10,000 and 15,000. There were false stories about looters (invariably identified as "foreigners") robbing corpses and being lynched by outraged survivors. One of the best and most stylish of the reporters who rushed to Johnstown was 25-year-old Richard Harding Davis of the Philadelphia *Press*, later a celebrated foreign correspondent. Other newsmen gleefully reported that when Davis arrived he first asked about a restaurant, then rental of a horse and buggy, and finally where he could buy a boiled shirt—none of which was handy just then.

Books about the flood appeared almost as quickly as instant news books are published today; the 30-page *Johnstown Horror* was out in a week. A mythical horseman who supposedly tried to warn Johnstown of the imminent deluge was a recurrent hero in the books and in poetry ("Like the Paul Revere of old, / Comes a rider brave and bold, / On a big bay horse he's flying like a deer. . . ."). A Johnstown dentist toured Pennsylvania with an exhibit of 220 lantern slides, and stereopticon views of the devastated city sold briskly.

The great tide of publicity attracted sightseers who arrived on excursion trains, with picnic lunches, photographing one another amid the ruins and buying relics from enterprising natives.

The exhaustive press coverage stimulated a rush of private benevolence that eventually threatened to overwhelm Flood City. Food, clothing, medicine and other provisions began arriving immediately. Morticians came—Johnstown's first call for help requested coffins and undertakers. Demolition expert "Dynamite Bill" Flinn and his 900-man crew cleared the wreckage at the stone bridge. At its peak the army of relief

Oldest living survivor of the flood, Elsie Frum, was only 6 when her family's house was carried off.

workers totaled about 7,000. They carted off debris, distributed food, erected temporary housing and occasionally made a heartening discovery—a parrot named Bob was found alive in the wreck of one house, complaining that it had had "a devil of a time."

Clara Barton, the 67-year-old founder and leader of the American Red Cross, appeared in town on June 5 and stayed into October, concentrating her formidable energy on housing; 1,600 homes had been destroyed. Many survivors moved into wood-frame "hotels" erected under Barton's supervision (SMITHSONIAN, May 1981). The Pittsburgh-based Pennsylvania Relief Commission coordinated fundraising, which brought in $3.7 million in gifts from around the world. The commission made cash awards to widows (a generous average of $1,500 each), orphans and others in need.

One of the 1,400 carloads of supplies shipped to Johnstown carried blankets contributed by members of the South Fork Fishing and Hunting Club. Carnegie, Frick and the other club members had nothing to say about the flood, but the press soon zeroed in on the shoddy repairs of the dam as a major cause of the disaster. "We think we know what struck us," Swank wrote two weeks after the flood, "and it was not the hand of Providence. Our misery is the work of man." A coroner's jury deemed the dam owners "culpable in not making [the dam] as secure as it should have been." An engineering report cited the restricted spillway and the sag in the dam's crest as primary factors in the dam's collapse.

Press and public were especially outraged that the dam repairs had been made for *fishing*, for the comfort and pleasure of rich folk at play, with what appeared to be such scant regard for the risk to the humble toilers in the valley below. A poetic couplet summed it up: "All the horrors that hell could wish, / Such was the price that was paid for—fish!" In the end, however, the South Fork Club and its members escaped all liability. Several lawsuits ended in verdicts that the flood was an act of God and not the result of Man's negligence.

The club members were of course among the most powerful men in the state; two, Andrew Mellon and Philander Knox, later became Cabinet members; juries may well have been intimidated. With the lake drained and local sensibilities inflamed, the club abandoned South Fork and broke up.

If dazed but resilient Johnstowners felt safe with the dam gone, they didn't have long to enjoy it. Two years later the rivers overflowed after a storm, just as the city was getting back on its feet, and again in 1894; another flood in 1902 washed out a bridge, and in 1907 the entire downtown was once more underwater. In March 1936 two days of hard rain and a heavy accumulation of snow in the hills combined to cause the worst deluge since 1889. The rivers rose 18 inches an hour and peaked downtown only five feet below the 1889 high-water mark. Twenty-five people died.

Elsie Frum and her family were living close to the center of town when the 1936 flood struck on St. Patrick's Day. "I got to the top floor and stayed there all night," she recalled. "The water came up to the top step—there were 13—but no higher. We lost everything downstairs—a piano, a stove and a refrigerator we still owed $10 on." Eleven-year-old Earl Glock and his sisters spent the night with friends who lived on high ground, separated from their parents. "My reunion with my mother the next morning is one of the most poignant memories of my life," he says. "Both of us thought the other had drowned. There were rumors that another dam had burst. I was terrified."

Two years later the U.S. Army Corps of Engineers began deepening, straightening and walling nine miles of the Johnstown rivers in what was then described as the most extensive channel-improvement project in American history. When the $7-million flood-control project was finished in 1943 the Chamber of Commerce boasted that Johnstown was now "flood-free."

Stifling "flood-free" talk for good

The grim realization that a flood-free Johnstown, alas, was impossible dawned 34 years later. One night in July 1977 nearly 12 inches of rain fell in seven hours. Dozens of mountain streams cascaded over their banks, seven small dams gave way, and the water eventually topped the concrete walls, 30 feet high at some points, guarding Johnstown. The depth of the Conemaugh River at the tip of the triangle rose from a foot to

35 feet in ten hours. This time 77 people were killed.

The Corps of Engineers said that it was, on the average, a once-in-200-years flood and pointed out that it would have been worse without the walls. The Corps also stifled the "flood-free" talk for good. Elsie Frum and Earl Glock had by this time moved to the nearby hills, as many of the Johnstown gentry had done in the 1890s.

Johnstown had at last been purified of its illusions. "We learned that we're never going to be truly secure," says Richard Burkert, director of the Johnstown Flood Museum. "People here are ambivalent, there's a tendency to suppress flood talk. But in the renovation of our building that the National Park Service is funding, the boiler and the rest of the mechanical guts are on the third floor"—as mandated by an ordinance tied to federal flood insurance. The refurbished building is scheduled to open officially on the centennial of the flood, along with a new National Park Service visitor center near the remains of the South Fork Dam (an NPS National Memorial since 1964).

"The 1977 flood traumatized people here," says Randolph Whittle jr., director of a business group called the Greater Johnstown Committee. Whittle has pressed the Corps of Engineers to recommend further channel work. "Statistically it will happen again," he says. "I want the best protection we can get." But the Corps maintains that the high cost of further protection is not justified, mainly because there is only about a 1 percent chance each year of another flood surging over the walls already in place.

Not long ago Earl Glock stood on the summit of Westmont Hill, 500 feet above the old city that looked like a bird's-eye-view engraving in the fading light, and pointed to a steep emerald-green hill across the slender valley. "That's where Grandpa carried Grandma in 1889," he said. "You know, I really don't think about another flood, and I don't know many who do. Maybe it's like the Army—we just remember the good things." But a small boy nearby was thinking about it. "Daddy, will we have more floods here?" he asked. "I don't know, son," the young father replied. "I hope not."

Commemorating the "Unidentified Dead From The Flood May 31, 1889," this granite monument at Grandview Cemetery on hillside above the town marks the resting place of more than 700 unknown victims.

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By William Weber Johnson

The exhilaration and exaltation of painting the sky

Should you harbor a notion that kite flying is just for kids, trot over to the nearest park, beach or meadow on the next breezy day

Ideal for light winds, a host of *Skywriters* flutter merrily on flexible poles at Long Beach, Washington.

Friends, upon seeing me at it, give a half-amused, half-pitying appraisal—what I regard as the LMC (low marble count) look. Why, they seem to ask, should an otherwise rational old boy, one-time international journalist, professor emeritus at a major university, author of a dozen or so books, indulge so fervently in a childish diversion?

Childish diversion indeed, I am tempted to say. For more than 2,000 years this enterprise has engaged the serious attention of scientists, scholars, warriors, priests, artists and craftsmen.

But instead of such pedantry I make it simple: people have always liked things that fly—birds, windblown leaves, butterflies, bumblebees. And kites. Kites that float in majestic beauty, that sparkle like daytime stars, that dance with the wind, that swoop and dive and spiral like drunken helixes or swallows gone mad.

I knew this in a limited way in my boyhood when, like everyone else, I made kites out of the comics section of the Sunday paper, flour-and-water paste, split bamboo and scraps of string. I came back to it almost a lifetime later on daily walks in a waterfront park. There, in the fresh ocean breeze, I fell in with a group of hardcore kite fliers. There were a couple of submariners (who have an understandable craving for sunlight and wind), a rent-a-cop, a doll maker, a paraplegic computer student, a lawyer, a stewardess, a college chemistry student, all in passionate pursuit of aerial perfection. They call it "painting the sky."

Heloise Lochman's soaring *Sky Phases* reflects the sophistication, complexity and elegance of today's kites.

Most of them were flying stunt kites, with two lines for manageability. I began with stunters like theirs and still fly them occasionally. But more and more I was drawn to big, showy, single-line kites, and for them I developed a deep affection. Now, two years later, I own 20-some and have a few more in mind. I am what the Japanese call *tako kichi*, kite crazy.

Flying them has produced some interesting encounters. Three French couples marveled that I, an elderly American, should fly a kite made by an Englishman to resemble a Japanese crane. "*Comme c'est curieux!*" ("How odd!") A Dutchman, watching my 35-foot Hagaman Parafoil, gave me an interesting lecture on aerodynamics. Two teenage girls linked arms and serenaded me with a song about flying like a kite. A woman from Alaska watched my blue-and-scarlet compound box kite rise gently, trailing a 40-foot streamer, and muttered "Oh God, oh God, oh God . . ." A man who used to bring his mother in a wheelchair says she still talks about the "kite man." Mexican children take turns holding my kite line and say "*Gracias, abuelo*" ("Thanks, grandfather"). And ever so many good souls stand silently watching my black-and-pink Sinotte delta with the Eyman spinners and then say only "How beautiful. Thank you."

With comments like these, a kite flier may argue that

Capable of complex maneuvers in strong winds, Peter Powell stunt kites zip along at more than 60 mph.

Letting off steam after competing, celebrants blazon sky over Kapi'olani Park with lights attached to kites.

he or she is performing a public service. But the really honest ones will admit to ego gratification. Ray Miller, whose stack of 24 Hyperkites, each trailing a long streamer, is frequently applauded by onlookers when the arrangement gets airborne, says, "If it weren't for that, I'd go some place where the wind is better." And William George Stiles, a grizzled Navy veteran whose long train of bright-colored little Japanese kites always attracts a crowd, says, "We are all show-offs."

But there is more to it than that. It provides both excitement and nonpharmaceutical tranquility. It challenges one's wits and skill, and is an escape from traffic, foul air, noise and other urban woes. It can produce an autohypnotic state of mind, an opportunity for meditation or reflection. For some it offers the sort of enchantment one gets from fine art, great music or dance. As a sport, kiting, like sailing, surfing, hang gliding and downhill skiing, offers the satisfaction of converting Mother Nature from a capricious virago to an exciting and accommodating playmate. And if you want to make new friends there is no better way except walking a friendly and well-mannered dog.

The origin of kites is obscure. They were probably born in China more than 2,000 years ago. One legend says a gust of wind blew a farmer's hat off. It was tethered, so he got back his hat and also got an idea. Kites came to be used in ceremony, in war, in thievery, and in such practical matters as fishing and towing a boat. Marco Polo brought back a tale of kites being used as economic forecasters. Before a merchant ship set off on a trading voyage, a drunkard would be tied to a kite and launched from the deck. If he was successfully carried aloft, it augured well for the journey. If he crashed, the trip was postponed. The Greek myth of Daedalus and Icarus may have been a kite tale. Another such story: the grand vizier of Assyria was ordered by his pharaoh to build a castle in the air. The vizier trained two small boys to ride "eagles"—almost certainly kites. When they were checked out, they flew over the pharaoh's palace and shouted down that they were reporting for work, and would begin as soon as the pharaoh sent up stones and mortar.

In modern China, Chairman Mao thought that kites were relics of bourgeois decadence and banned them. Since Mao, they have regained their place in Chinese culture, and the kite festival at Weifang attracts visitors from around the world. Although there are fewer master kite makers, Chinese kites, delicate arrangements of bamboo "bones" and either tissue paper or silk "skin," are important export items, highly regarded as art objects. To have flown one from the Great Wall is, for a kite flier, the equivalent of a holy pilgrimage.

Historically, most kites were flat or slightly bowed. Benjamin Franklin's famous kite was nothing more than a silk handkerchief stretched on two cedar sticks. Though Marco Polo reported man-lifting Chinese kites in the 13th century, throughout the 19th century there were many efforts in the West to develop a kite

Called "Mr. Bill" at San Diego's Embarcadero Marina Park, the author flies kites almost daily. He's also written on the California condor and Diego Rivera.

Lure of kiting and Hawaiian ambience drew 70 entrants, 500 onlookers from as far as China, Japan.

Randy Tom's flame-patterned Hyperkites are flown in a colorful 52-foot stack at Honolulu aerial fete.

that was capable of lifting, possibly carrying, a man.

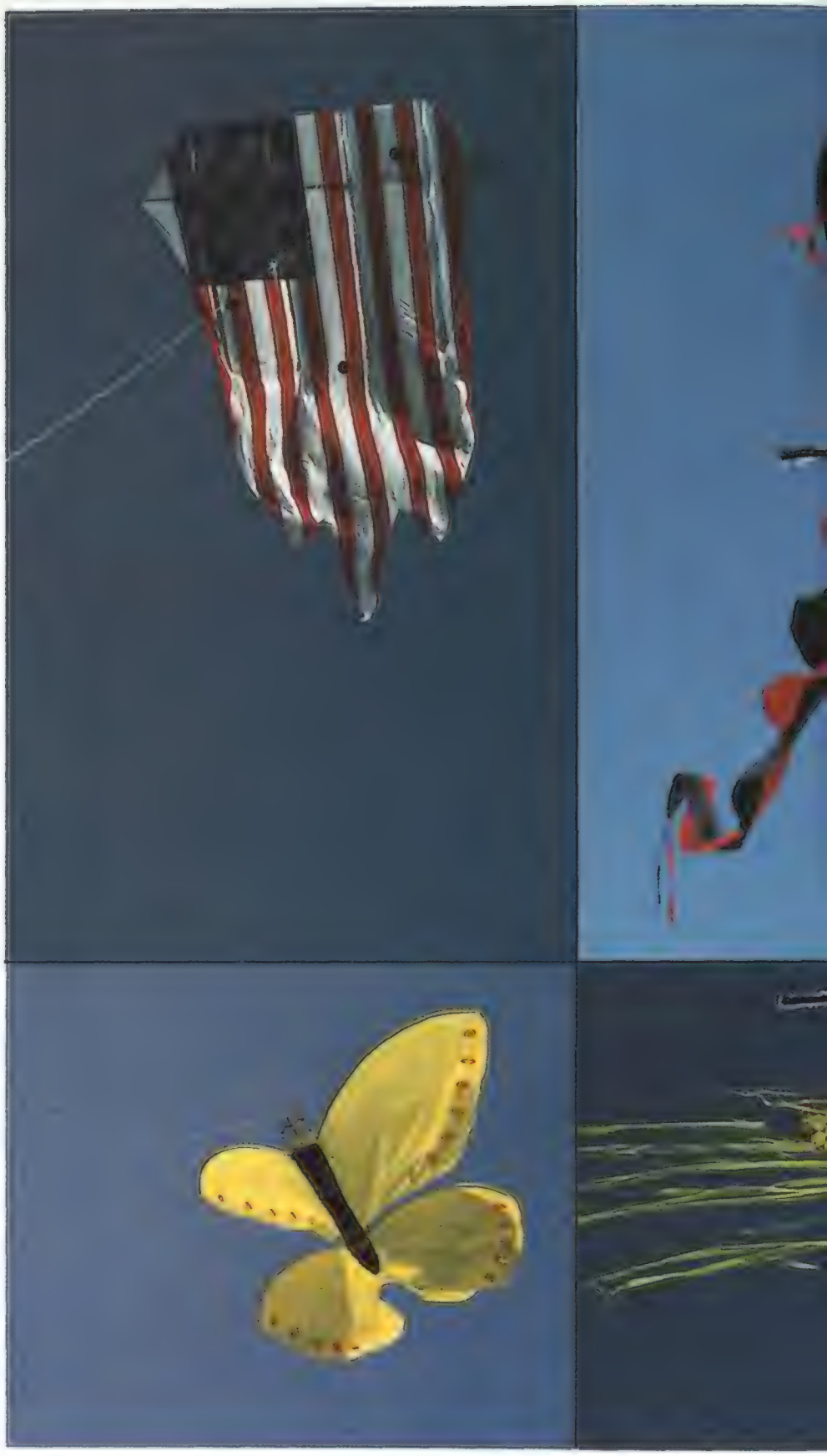
One of the most successful 19th-century kites was the cellular, or box, invented in 1893 by Lawrence Hargrave, an English-born Australian. It consisted of two or more open-ended cells. It offered great stability and lifting power, and was soon put to use by meteorologists. The kite led to gliders, and the gliders led to airplanes, which in turn led to the space age. This evolution reduced attention to kites for a time. But the high-tech materials that sprang from scientific advancement—such things as ripstop nylon, Dacron, Kevlar, fiberglass and graphite—led to a renaissance. Contemporary kites are stronger, more versatile, and more creative in design and structure. And vastly more popular.

Surest evidence of kiting's growing popularity is the proliferation of festivals. They have been held in Japan for two centuries and several U.S. cities have held them for more than 50 years. Even small towns have them. Mother's Day has been celebrated in Colorado with a kite fly sponsored by a women's organization, the Beulah Valley Association for Tethered Flight. The Smithsonian has held its kite-flying contest every spring for 23 years. Most scenic is the Hawaiian Challenge, held in Kapi'olani Park just below Diamond Head in Waikiki. Probably the most popular of all is the Washington State International Kite Festival. Last August 100,000 people crowded into tiny Long Beach, Washington. There, on 28 miles of hard-packed sand swept by the Pacific winds, they put up a variety of flying objects, demonstrated innovations, competed for trophies, showed off, swapped secrets, told a few lies and, in general, took pity on the nonkite world.

But, lacking a festival, the kite flier or kite curious can go to the nearest treeless park or unfenced pasture on a sunny, breezy day. Chances are there will be fliers, all ages, all colors, all joyful navigators of the invisible rivers of the air, all wearing what artist Tal Streeter calls the "kite smile." A few designs may be old-fashioned—newspaper, sticks and ragged tail. Most will be modern, made of ripstop nylon in brilliant colors. More and more often the scene will be dominated by dual-line stunt kites, whirling about in loops and swoops.

Manageable or maneuverable kites date back at least to George Pocock, an Englishman who in 1822 invented the *char-volant,* or kite carriage. He hitched two big arch-top kites to a light carriage, each double bridled so that Pocock, traveling down country lanes, could avoid snagging trees and steeples. And in World War II, the Smithsonian's Paul Garber developed for the U.S. Navy a maneuverable kite that simulated a Japanese Zero for target practice.

Today's stunt kites have evolved from two English antecedents. The Flexifoil, invented by Andrew Jones and Ray Merry, consists of a series of parallel air cells with a flexible spar across the leading edge. It is capable of great speed and broad maneuvers. Another Englishman, Peter Powell, mass-produced a fast and sturdy diamond-shaped kite capable of sharp turns and intricate figures. Both kites used two control lines and were introduced in the mid-'70s, starting a boom that has continued. Today, stunt kites account for at least half of all kite sales.



Fanciful kites, from top left: Scott Spencer's *Fort McHenry Flag*; intertwined cobras from Down Under;

An early Powell owner was Steve Edeiken, a Venice, California, cabinetmaker. He designed and made for his own use six smaller, lighter and more responsive kites, all strung together. Beach people urged him to make more. He went into business making and selling Rainbow stunt kites, and quickly became a major figure in the kite world. But he died in a freak accident in 1983, overseeing safety in the launching of a kite almost one-half the size of a football field. College students had made the kite in the hope of getting into the record books. When a sudden gust of wind thrust the monster into the air at Long Beach, one of the many shroud lines wrapped around Edeiken's ankle. He fell to his death from about 275 feet.

Many followed Edeiken's lead as designers and makers. One of the most successful is Don Tabor of San Diego. Like Edeiken, he began by making kites for himself; then, through persuasion, for friends, one at a time. Success came with his Hawaiian Team, an eight-foot stunt kite with a price so high ($150) most dealers refused to handle it. Soon there was a waiting list for the Hawaiian and the lighter, faster Spin-Off. Tabor's company, Top of the Line, grossed $1 million last year and is expected to reach $2 million in 1989.

Much of Tabor's success has come from his performances at kite festivals, either as an individual or with his team. Star of the team is Ron Reich, a 47-year-old mechanical designer. During 1988 he was a consistent winner at major kite festivals. Oddly, he is a newcomer to kiting. Only four years ago, he and his wife watched stunters flying at Mission Bay Park in San Diego. Three weeks later he bought a stunt kite and was pleased to find he had a natural aptitude. Soon thereafter he and his 20-year-old daughter, Shelly, competing as a team at a Redondo Beach festival, won third. Tabor, whose team had won first, recruited him. Reich became team leader, choosing and calling out the maneuver commands, and also choreographing what kiters call the ballet numbers. To account for his skill he says, "I'm ambidextrous, a switch-hitter. And I play the accordion so I'm used to having my hands do different things. Besides, I love kites."

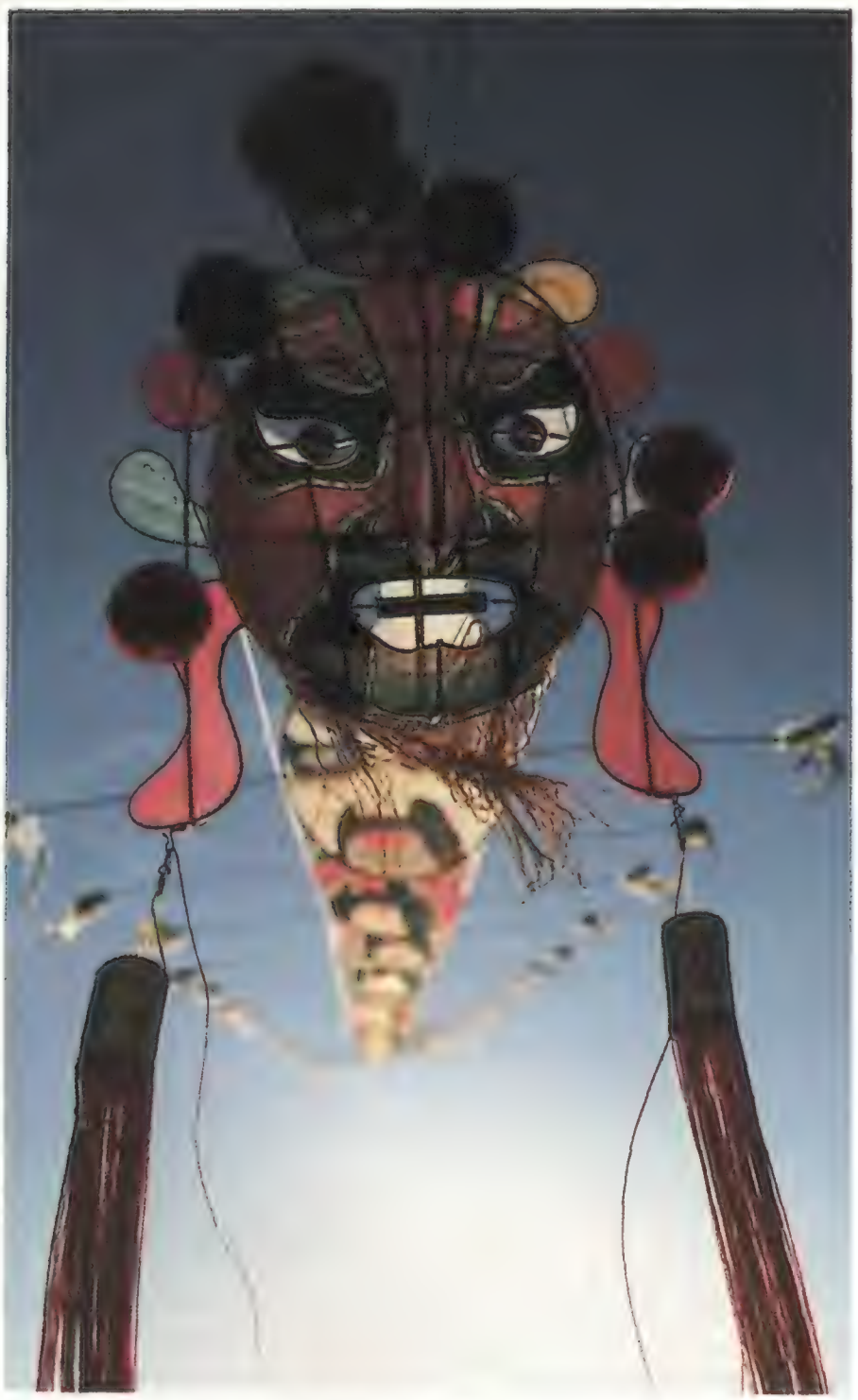
The stunt kite, either individually or stacked, is normally launched from the ground. Standing upright and leaning away from the wind, it is held in position by the tension of the 150-foot lines. A tug on the lines

two Kevin Shannon Samurais; the Turners' 6-foot Bermuda, *Spring Fantasy*; cobra clown, Newport boat delta; Chinese butterfly; the Hoskings' 60-foot *Seven Sisters*; George Peters' *Sky Bird*; Jon Burkhardt's *Mavis*.

sends the kite or stack into the air (as many as 253 Hyperkites, small custom models made by Randy Tom, have been flown in a stack). It is then like riding a horse with a tender mouth. A slight pull on the right means a turn to the right; left, to the left. Pulling back with one hand means a loop; a stronger pull a dive, terminated by an opposite pull. Elbows are kept close to the body, arms moving back and forth. Wild waving of arms brings a crash. Pulling back with both arms on an upturned kite sends the kite upward. When directly overhead, it's in a stall position; the right and left edges of the wind are also stall positions. For a smooth landing, one flies the kite near the ground to the right or left stall position, and steps forward. Properly handled, it settles gently to the ground, in position to fly again.

In competition, stunt fliers perform certain prescribed figures such as circles, circles in squares, hair-

When the wind is only 6 mph, Tyrus Wong's tiny kite—six-inch wingspan, three-foot tail—is just the thing.



Made in Weifang, China, this fearsome dragon extends 150 feet, is of hand-painted silk on a bamboo frame.

pins, bow ties. Team members go through precisely matched figures, play follow the leader, fly with their lines crossed, and execute such stunts as the "starburst," in which all kites break out of formation, fly in different directions and then reassemble.

Some sophisticated fliers do kite somersaults and turnarounds, fly several stunt kites at once (working multiple sets of lines), or dance to music and make their kite or kites do the same. Lee Sedgwick and Sue Taft have pioneered "dog stake" flying, in which the stunt kite's two lines are run through a staked ring and back to the flier, 75 feet away. Both kite and flier face the wind, and the stake enables the kite to be launched at the flier's side. Then a repertoire of tricks can be performed within a few feet of the flier's head. Sedgwick also pioneered the use of four flying lines—"quad lines"—instead of the usual two, for tighter control.

In San Diego in January, three local brothers—Joe, Jim and Dave Hadzicki—newcomers to kite designing, introduced a radically new model that became a sensation at the Kite Trade Association show. Called the Revolution I, it is designed specifically for quad-line control and looks like two triangular kites joined side by side like Siamese twins. Precise control is not by backward and forward motion of the forearms, as with most stunt kites, but by thumbs and forefingers, along with subtle movements of the wrists. The kite can be made to fly forward, backward, upside down, to cut geometrically sharp corners, to spin like a propeller.

Stunt fliers are continually searching for faster, more-complicated stunts and more-spectacular ballet movements. Since ripstop nylon is waterproof, some fliers deliberately fly their kites into bays or lakes, let them sink, then fly them out again as the kites shake off water like a dog. Ron Reich, who has tried all the innovations and created a few of his own, has even flown his kites underwater, using scuba gear. "The only difference," he says, "is that it is much slower."

Excitement and exercise—or exaltation

Witnesses' reactions to stunt kite antics are usually an exclamatory "Wow!" or "How do you do that?" The single-line flier, by contrast, frequently gets an "Aaah" or "Ooooh" or "That's the most beautiful thing I've ever seen." Considering that both kinds of kites are often flown in the same airspace, and that the motion of stunt kites is horizontal by nature and that of single-line kites vertical, disputes and tangles might be expected. If the fliers are experienced, these seldom occur. Most agree that stunters get the excitement and exercise while the single-liners get the exaltation.

The exaltation factor accounts for the widespread ceremonial use of kites. In Greece, kites are flown on Clean Monday, the first day of Lent in the Eastern

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Adapted for a five-mile-long tail, *Flying Red Line*, Tal Streeter's Jalbert Parafoil, is tested in the Mojave.

Snow is no obstacle to inveterate kiters; here, George Peters' big wind catcher *Play Sail*, his *Feather Flag*.

Church. In Bermuda, Good Friday is observed with hot cross buns and the flying of "rounees," or locally made round kites. In the Guatemalan mountain village of Santiago de Sacatepéquez, the Indians make 30-foot round kites with bright-colored paper stretched on a 12-spoke frame, take them to the cemetery on All Souls' Day (November 2) and fly them over the graves in honor of the dead.

Exaltation also explains at least part of the fascination kites have for artists, both as a challenging medium and as a diversion. One is Tal Streeter, a sculptor from Millbrook, New York. He is an authority on Japanese kites, and his, many made in the Japanese manner, have been widely exhibited. "A kite," he says, "is a kind of pottery for the wind. The sparse minimalism is a given of the functional requirements of flight. Perfection of form is an absolute. The kite itself, flying, is a great wonder—transcending art."

George Peters, a fiber sculptor from Boulder, Colorado, is famous for big kites that look like flying stained-glass windows or fanciful creatures. He began making kites because a sailmaker friend gave him bundles of multicolored scraps of ripstop nylon, left over from the making of spinnakers. "I make and fly them for fun," he says, "for the craft of it, for performance and display, the sheer heaven of it; to pursue a creative urge melding form and function. Kite flying is a celebration, using the breath of this glorious planet as a dancing partner." Then, as an afterthought, "Kite flying has gone from a couple of bicycle shop inventors to propelled flight to ICBMs that could stop breath and life. It's ironic how a party can get out of hand."

All of Peters' creations have an element of playfulness. His *Skywriters* are 60-foot streamers of patchwork nylon that, when waved from 20-foot poles, create sort of curlicue abstractions in the air. *Play Sail* is a multicolored rectangle resembling a monstrous crazy quilt. When held by the corners by four stout men it becomes inflated by the wind and looks like an eccentric pleasure dome about to take off. His fanciful flying-creature kites, among them a pterodactyl and various birds, are both beautiful and a little spooky.

Bird kites also attracted 78-year-old Tyrus Wong after his retirement from a distinguished film career as a scene illustrator. Remembering his father's tales of making swallow kites in China as a young man, Wong made three beautiful swallow kites that would not fly, then made 25 more that would, and flew them together, each on its own line and all attached to a main line. He went on to doves, butterflies, centipedes, abstractions, and comic figures such as an angel with big wings, frizzy yellow hair, rolling eyes and striped stockings. Wong and old kiting cronies in California fly on Santa Monica Beach on the fourth Saturday of each month. Roger Chavez II made a special kite for these occasions: a yellow-and-black square, like a highway warning sign, that reads MEN AT PLAY.

Santa Monica artist Tom Van Sant is known for his gigantic centipedes. One of his most famous has each segment shaped like a trampoline. A mile-long kite that he calls *Jacob's Ladder* has yet to be flown. When he does fly it, he says with a smile, he intends "to climb

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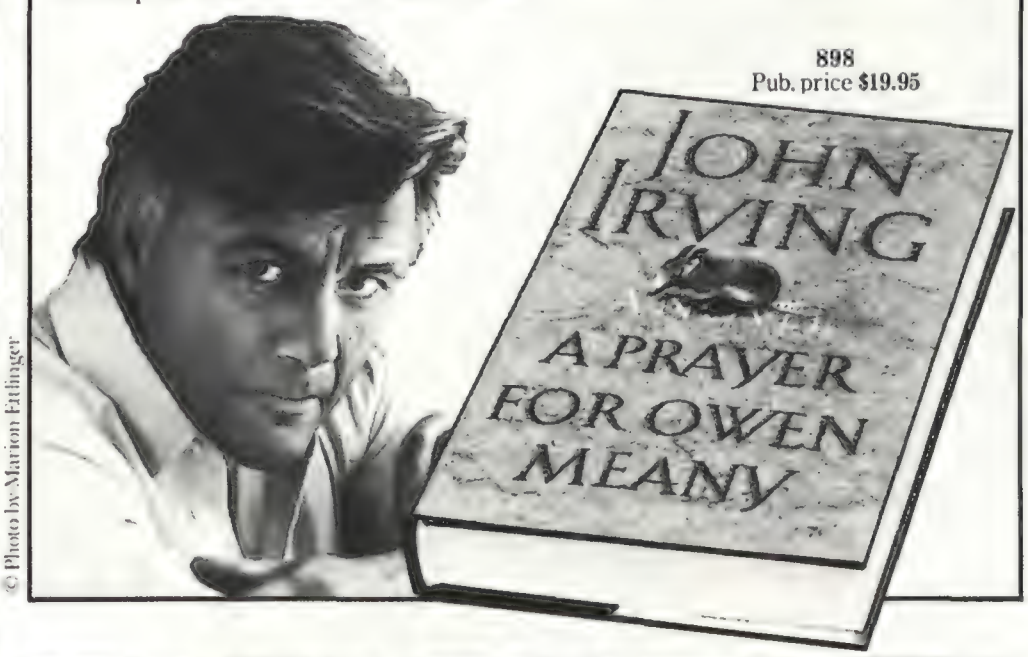

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Ron Reich flies three Spin-Offs with six lines: two each in hands, on belt at hips, hooked to belt front.

to the jet stream and disappear, just like Houdini."

Until recently, kite designs or decorations were appliquéd to the face of the sail. Then the part behind the appliqué was cut away so that all parts would be equally luminous. Lately some of the most beautiful kites have been made of patchwork. This makes possible intricate designs, some of the favorites being taken from classic American quilt patterns. Bill Lockhart and Betty Street, both on the art faculty of Texas Tech University in Lubbock, are pioneers in this kind of kite making. Says Lockhart: "We adjust, change, use variations of these patterns. I approach kites as an art form."

Another user of quilt patterns is Scott Skinner of Monument, Colorado. The former Air Force pilot denies that he is an artist, but his kites are widely regarded as works of art. He usually employs traditional Japanese kite forms such as the Edo and Rokkaku, making the sail out of patchwork. He has also invented other strongly geometrical designs. There is a honeycomb with Japanese bees on its face; a giant turtle with an intricately patterned shell in green, red and black; a soaring condor seen through an uncurtained multipane window.

Artistic and otherwise, how big has kiting become? Precise statistics are unavailable. Large manufacturers turn out millions of little plastic kites retailing for $1.95 and up—the kind confirmed kiters call "dime-store kites." Fine kites, selling for many hundreds of dollars, are mostly made on a cottage industry basis, by hand and one at a time, by the likes of Jerry Sinotte, Stan Swanson, Doug Hagaman, Kathy Goodwind (the final *d* was a late addition) and Kevin Shannon.

Most retailers say business has been increasing 15-20 percent annually, although Corey Jensen, former president of the American Kitefliers Association, says sales at his store in Monterey, California, regularly grow at the rate of nearly 35 percent. When Surendra Bahadur opened his kite store in New York City in 1964, it was the first one in the country. Now there are between 400 and 500. In the past 12 years the circulation of *Kite Lines* magazine has grown from 3,000 to 13,000, and two new publications, *American Kite* and *Stunt Kite Quarterly*, are coming on strong.

Year-round flying conditions have helped the boom in kiting in the Sun Belt. But it has also grown in areas less blessed climatically, such as Maryland, home to the American Kitefliers Association and several festivals, and the rainy Pacific Northwest. Both Washington and Oregon have strong state organizations, many kite makers and notable festivals.

No one is known to have got rich by flying kites and comparatively few by making them. But there is in all sectors of the kite-flying world a strong, almost religious, sense of commitment. Said Wyatt Brummitt, speaking at the first annual meeting of the American Kitefliers Association in 1978: "They may seem to be only so much fabric and sticks . . . but we have put ourselves into them and, far up there, they come alive—and live their own lives. The greater the serenity of their living, the greater their triumph—and ours."

Frances Weaver, a founder of the Beulah Valley Association for Tethered Flight, resorted to poetry: "Skim above me lively free / Ascending as the sunlight beckons / Bait for angels Wait for me."

In a season of anxiety about the state of the world and civilization, what this "childish diversion" comes down to is that the bit of color at the end of your line, dancing in the light, and the tugging at your hand are visible and tangible proof that the sky is not falling, no matter what Chicken Little says.

Reich's custom Spin-Off *Sunset* at end of a "tip drag"; flying, it drags wingtip across water, leaving a trail.

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Trapped in a glacier for thousands of years, these bubbles (dark areas) hold air samples from eons past.

By Jonathan Weiner

Glacier bubbles are telling us what was in ice age air

Before we can say what's happening to Earth's atmosphere, and what our future holds, we have to find out what it contained long ago

"I'm about 20 years too long in this crazy business," says Heinrich Rufli. He and Felix Stampfli are climbing the Grindelwald Glacier, chopping steps with ice axes as they go. Five hundred feet above them, ice pinnacles point into the blue sky, ready to topple in their general direction. Now and then there is a sound like thunder. The two men whip their heads around to check for falling ice. Then they laugh.

Felix is in his 20s, and gangly. Heinrich is in his 40s, a solid block of a man with an air of competence in physical trials who has survived three avalanches. He is one of a team of scientists at the University of Bern. With the big drills that he designed and built in the university machine shop, the Bern team brings up cylindrical cores of ice from hundreds of feet below the surface of Swiss glaciers, and from many thousands of feet down in the Antarctic and Greenland ice sheets. The ice holds an abundance of bubbles (left) the size of seltzer fizz. The bubbles hold a wealth of stories on themes that encompass the planet: the death of the fabled island of Atlantis; the history of the greenhouse effect; the cause of ice ages; scenarios of the Earth's climate in the next hundred years.

In another lifetime, Heinrich might have been a mountain guide or a chamois hunter. Instead, he is an ice hunter and an air collector. More times than he cares to count, he has spent Christmas Eve at Byrd Station in Antarctica, or passed August 1, the Swiss national holiday, at the Dye 3 base in Greenland, while his wife, son and daughters lit bonfires and celebrated

without him in the tiny Swiss village of Konolfingen.

Today's climb is practically time off, compared with the polar expeditions. Heinrich has driven just a half-hour out of Bern to field-test and fine-tune his smallest drill (right), which he calls "the baby." His larger rigs are transported in sections, by helicopter; only the baby can be carried on one's back. It is a tube the size of a bazooka, with an aluminum crank at the top and a sharp steel ring, the drill bit, at the bottom. To use the drill, Heinrich plants his feet squarely on the ice slope, inserts the drill bit in a dent he has chopped in the ice, and holds the tube upright, while Felix actually turns the crank.

"*Roosh, roosh, roosh!*" Heinrich growls, mocking his baby's squeals, as the rotating drill slices into the ice. "*Shloopy, shloopy, shloopy!*" he says, mimicking the baby's sloppy sounds as the borehole fills with melt-water. He and Felix take turns cranking. Then they lift the drill and shake it. Out slides a rod of ice the size of a small fence post.

Anthropologists have bones; geologists have rocks and fossils; archaeologists have pots, pyramids and papyruses. But until recently, atmospheric chemists had no fossil air. They were stuck in the present. They could study the mixture of gases in the atmosphere we breathe today, but not readily the air of the past.

Yet the atmosphere does change in time, like the landscapes and civilizations that come and go beneath it. Today, for instance (a notorious instance), the amount of carbon dioxide in the air is increasing rapidly. Atmospheric chemists believe the rise has been going on since the beginning of the Industrial Revolution, from the burning of coal, oil and wood. Because it is a "greenhouse" gas, it may warm the Earth uncomfortably in our lifetime, our children's, or our grandchildren's, perhaps altering weather patterns, and melting glaciers and ice sheets, and causing the oceans to flood coastal cities. But how much gas have we injected into the atmosphere? How big a dose has the Earth received? Without a sample of fossil air, it was very hard to say, because no one really knew how much was in the atmosphere before the Industrial Revolution.

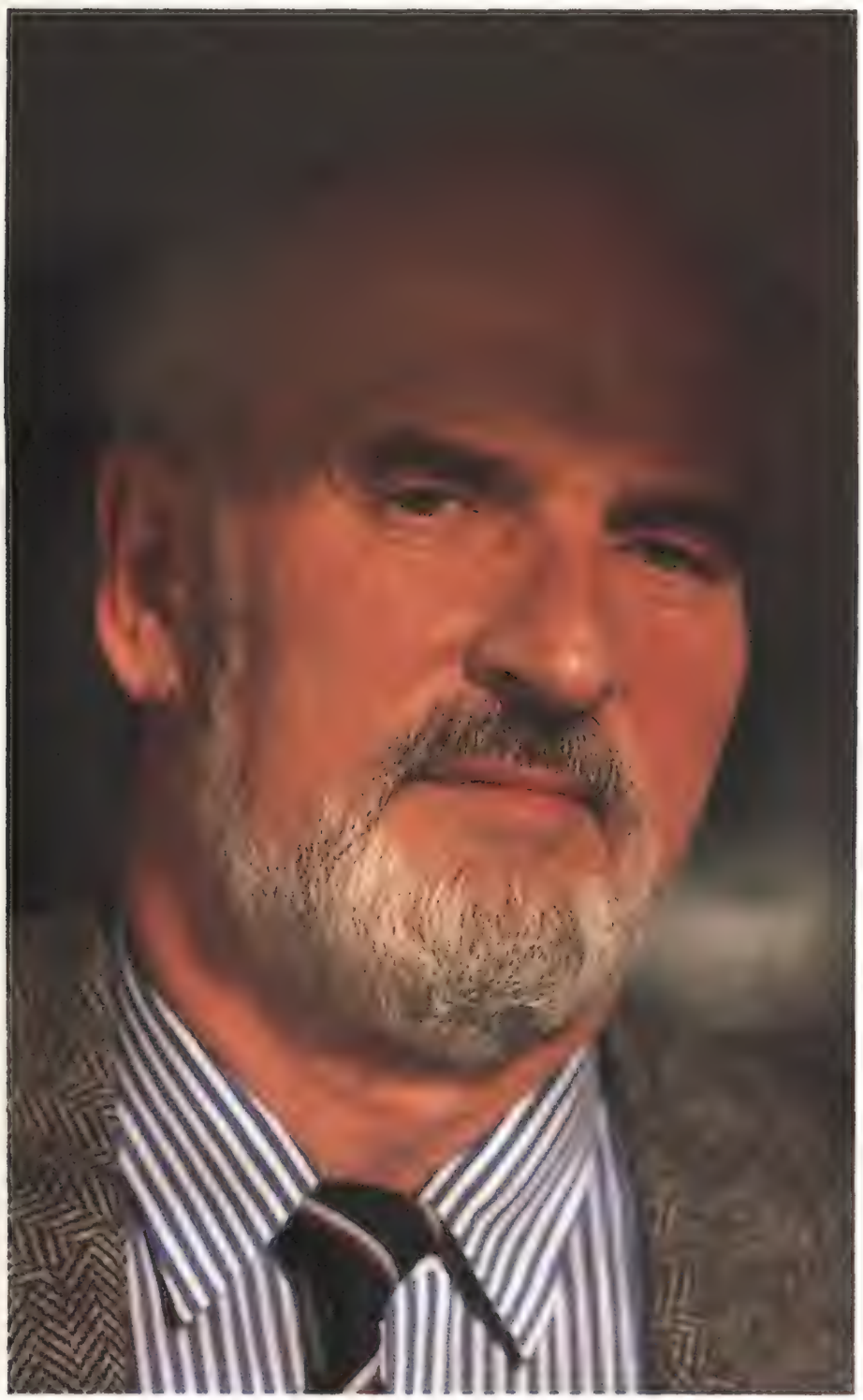
Fossil air from the ice archives

Heinrich's boss is Hans Oeschger, a physicist at the University of Bern and a world authority on the greenhouse effect. More than 30 years ago, he and a few other young scientists in several countries realized that ice might be a place—maybe the only place—to find fossil air. Glaciers form wherever snow can last through the summer, commonly in high mountains and near the poles. In such places, each year's snow falls on snow from the year before. Old snows get buried and compressed, melted and recrystallized, by the accumu-

Felix Stampfli (left) helps Heinrich Rufli drill a core on a glacier near their office in Bern, Switzerland.

Photographs by Raphael Gaillarde

Bubbles give up ice age secrets



Hans Oeschger, an atmospheric physicist, turned to glaciers to find samples of air from ancient times.

lations above them. By the time a layer is buried 200 feet down, it is solid ice. Snow that fell in the last ice age, when woolly mammoths roamed in the shadow of the glaciers, is still preserved in the ice. Oeschger suspected that the air the mammoths breathed is in there too, trapped in bubbles.

The study of glacier ice accelerated when military bases were established in Greenland. Along with radar stations and airfields, U.S. Army engineers dug "cities under the ice," ant's nests of barracks, bunkers, recreation rooms and mess halls. Scientists began intensive polar studies. It was boom time for glaciologists of the Western world. Oeschger teamed up with an American expert, Chester Langway, and a Dane, Willi Dansgaard, to extract tons of samples from the walls of a city under the ice.

Home in Bern, Oeschger built a team to work with the ice and drill more of it. His group grew as a snowflake grows, by chance encounters and natural affinities. Recruits were tapped in the Alps as often as in labs. Machinist and inventor Heinrich Rufli was discovered on the side of a glacier, teaching ice climbing to Swiss Army officers. A lieutenant clipped to Heinrich's climbing rope gave him Oeschger's phone number.

Ice corers trekked across more blank, white ice sheets than polar bears did, it seemed. Halfway up frozen mountains, with no other living thing for hundreds of miles around, they sent boulders thundering down just to hear some noise. A veteran like Rufli got so used to working at subzero temperatures that he found it was too drastic a change to go in and out of the hermetically sealed, well-heated research stations in Greenland and Antarctica. Instead he slept outside in igloos he built himself.

The lost history of the atmosphere

Throughout the 1960s and '70s, teams run by Oeschger in Switzerland, Dansgaard in Denmark, Langway and others in the United States and Claude Lorius in France published dozens of technical papers. They were learning a lot about ice, and their work was respected as glaciology. But most onlookers doubted the drillers would ever recover the lost history of the atmosphere. Looking for old air sounded like a project for Don Quixote and Sancho Panza.

Oeschger's team headquarters at the university is in the Institute for the Exact Sciences. You turn right just past the bust of Albert Einstein (the patron saint of physics in Bern; he did some of his best work there on the side, while employed as a clerk in the patent office). A young physicist, Jakob Schwander, leads me on a tour of the cold rooms and laboratories. The Bern team has 2,000 pieces of ice in its collection: cylindrical

cores a few inches in diameter and anywhere from a few inches to four feet long. Most of the collection is stored outside Bern at a commercial freezer plant. The group also enjoys borrowing privileges at the biggest ice archive in the world, which is in Buffalo. Its curator is Chet Langway, now chairman of the geology department at the State University of New York at Buffalo. Langway keeps track of nearly six miles of ice cylinders from the Greenland and Antarctic ice sheets. Most of the archive is stored in the ten-story freezer plant of the Buffalo Refrigerating Company. Langway rents space on the company's best floor, the second, where they keep the lobsters.

Hot snow from Chernobyl fallout

In the Bern cold rooms, cores are stored on shelves up and down the wall like scrolls from the lost Library of Alexandria. Each piece is filed in a clear plastic sleeve and a cardboard tube of the sort that is used to send posters through the mail. Some of the tubes are marked with the label "Tschernobyl I." "Hot snow!" says Schwander. These samples were taken from Signalkuppe, one of the highest points in Switzerland, not far from the Matterhorn. After the Chernobyl nuclear disaster in the Ukraine, members of Oeschger's group ascended Signalkuppe. Descending with ice cores, they announced to the country that it had been invaded by radioactive air.

On the shelves in the cold rooms is ice from stations all over Greenland, Antarctica and the Alps. Air in deep ice has been not only preserved but compressed. Sometimes when ice this old is drawn up a mile to the surface, the air in the bubbles expands and shatters the ice. Air hunters in Greenland and Antarctica like to use those ruined core fragments as party ice. To brighten Christmas or New Year's Eve at the South Pole, they pour their Scotch over antique ice and listen to the bubbles explode.

Schwander turns on a band saw. Ice shavings fly as he lops a little piece from a Dye 3 core. There are scattered, miniature explosions on the fresh cut as ancient air begins to break free. The physicist sets the ice sample in an empty Pyrex beaker and carries it to his office. We hang up our parkas. In the muggy air, our eyeglasses white out, and we have to set them aside.

To demonstrate the party-ice trick, Jakob fills the beaker with water from the tap, and places it on the window sill. We bend our ears. There is a quiet sound—a hissing. "It's much louder when the ice is fresh," Jakob says, apologetically.

According to atmospheric chemists, the air we breathe is so well mixed that every breath you take includes a molecule that was breathed by Jesus and by Hitler. Yet the air escaping from this beaker had been

Gamma-Liaison

White cylinder is a core thousands of years old, drilled from hundreds of feet down in Greenland ice sheet.

Gamma-Liaison

Newly drilled cores are temporarily stored in this trench near the Dye 3 radar station in Greenland.

breathed by no one in 12,000 years. The Stone Age, the Bronze Age, the Iron Age, the Industrial Age and the Age of Aquarius have all passed it by. It is Rip Van Winkle air, rising at long last into the 20th century. "We're really right at the end of the Ice Age," Jakob says, "just at the transition to the Holocene." When our sample fell as snow, the great ice sheets that had once advanced across North America and Europe were breaking up and melting. This chunk held out—until now. "So this is a piece of what is left of the Ice Age."

The Bern group has figured out how to crack the bubbles open without melting them. First they cut an ice core into samples about the size of gaming dice. In the laboratory, they pick up a cube with tongs, drop it into a vacuum chamber known as "the cracker," seal the chamber and pump out all the air. At the flick of a switch, steel needles press through a grid in the chamber like a diabolical trap in *Raiders of the Lost Ark*. The ice is instantaneously crushed to bits. Air escapes in a single rush and is sucked into a tube. There a laser shoots a beam of infrared light through the sample, measuring how much carbon dioxide they have in the chamber. They repeat the process a few times and take an average reading.

Only one-tenth of the volume of each ice cube is air. Of this air, only about one three-thousandth is carbon dioxide. To compare the amount of carbon dioxide in this old air with the amount in modern air, the scientists must measure this pinch of a pinch of colorless, odorless, tasteless gas with an accuracy of a few parts per million. "So you have to be rather sensitive," says a senior physicist in the group, Bernhard Stauffer.

"Ice is horrible stuff, horrible," Stauffer likes to say. Everyone has a tale of a precious core that shattered in its cushioned trough in the night, when no one had so much as breathed on it; or a plane full of ice that crashed in an ice desert. Air hunters share the nightmares and frustrations of ice sculptors. Priceless cores have been lost when a janitor, meaning to be kind, turned up the heat in a polar laboratory, or when a ship's refrigeration plant failed just out of Christchurch, New Zealand.

Where else to look for ancient air

Because ice is such maddening stuff to work with, you'd think there must be a better way. But there isn't. No one has found clean samples of old air anywhere else—and people have looked.

One team tried amber. They analyzed the air bubbles in a piece of amber 80 million years old, which is hundreds of times older than Oeschger's ice, dating back to the age of the dinosaurs. The air in the amber turned out to be peculiarly rich in oxygen, and this finding made headlines a few years ago.

Rufli pours liquid nitrogen into a cold trap that will capture ancient air liberated from an ice sample.

Unfortunately the amber story has not held up. If you leave an unopened plastic bottle of soda on the shelf for a few weeks, the soda will lose its fizz. The carbon dioxide seeps out through the plastic (and other gases seep in from outside). Amber is a lot like plastic at the molecular level. For this and other reasons, air trapped in amber may not stay pure for very long. It probably does not have a shelf life of 80 million years. Amber is fine for fossil insects but not for fossil air (p. 84).

Another team of scientists has drilled for ancient air in Egypt. Farouk El-Baz, an Egyptian-born geologist who heads Boston University's Center for Remote Sensing, tapped a chamber near the base of one of the Great Pyramids, that of Khufu. It was known to contain a wooden sun boat, sealed up about 4,500 years ago. With exquisite care, El-Baz and his team bored through the limestone, using a drill specially designed for the project by Black & Decker. They extracted air samples and sent them back to the United States for

Jonathan Weiner is working on a book, from which this article is adapted, on the future of the planet, in particular the greenhouse effect and world climate.

Markus Leuenberger extracts carbon dioxide; a later analysis will tell him the original source of the gas.

analysis. Alas, the chamber was apparently not airtight.

A few chemists at Los Alamos National Laboratory in New Mexico are trying still another approach. They have become antique hunters, seeking old navigational compasses, hourglasses, pocketwatches and telescopes—any relic that was tightly sealed in the past century or earlier. "We have a very high failure rate," admits Allen Ogard (whose full-time specialty is nuclear-waste migration). "So many things just leak." They are now looking at hollow brass military buttons that have been manufactured by a factory in Connecticut ever since the 1820s.

Stauffer speaks of some of these enterprises as scientists speak of rival projects the world over. "Ach, it's all . . ." A disparaging wave of the hand. "They want to take these buttons from the Civil War. But . . ." Another wave of the hand. "What better container could you have than distilled water? I was at the U.S. National Bureau of Standards when someone was saying, 'If *only* I could find a cannon that is buried with its mouth in the earth, then I would have the air from the *Middle Ages*!' Stauffer makes a face. "Imagine the *rust* you would have in there, and all the chemical changes . . ." he says, with real disgust.

"Or they want to find a sand clock, an hourglass, a thousand years old. But in there they won't find the carbon dioxide of planet Earth. They will find the carbon dioxide exhaled by the glassblower as he blew—up—the—hourglass! And those buttons from that factory—how can anyone even know what they have in there? It's one of a kind. Local."

"We are lucky with polar air," says Stauffer. "It is well mixed, in a very clean container, with a very neat filing system. Very extensive, very replicable—what more could you ask?"

Ice provides a history of the world

Using an arsenal of drills, the cracker, lasers and other custom-built tools, scientists are learning so much that every ice cube is a cornucopia. Ice provides a record of global volcanic eruptions going back more than a hundred centuries. Traces of sulfuric acid from volcanic fallout clearly mark, for example, the eruption of Laki in Iceland in 1783; of Tambora in Indonesia in 1815; of Krakatoa, on an island between the Indian Ocean and the Java Sea, in 1883. Virgil and Pliny the Elder claimed that the sun dimmed after Julius Caesar was assassinated in 44 B.C. Ice confirms the claim, for a number of major eruptions (which inject enormous amounts of dust into the air) left their mark in several winters of acid snows in Greenland at the time of Caesar's death. Most tantalizing, a strong volcanic eruption shows up in the ice around the year 1645 B.C. At about that time, the volcano Santorini, exploding in the Aegean Sea, may have wiped out Minoan civilization and started the legend of Atlantis. (Experts in tree rings, ice cores, carbon-dating and archaeology are now wrangling about the exact date.) The youngest layers of the cores are also marked clearly by the radioactivity that fell out from nuclear test explosions in the atmosphere in the 1950s.

The ice shows us how much the human presence is changing the atmosphere. Consider, for instance, the amount of lead in the air we breathe. Not very long ago there were experts who argued that most of this lead is natural and comes from volcanoes, sea spray and soil dust. Now Claude F. Boutron, an ice expert in the Grenoble group, and Clair C. Patterson, an American geochemist at the California Institute of Technology, have looked back over the past 27,000 years. They found that the amount of lead in recent Greenland snow is 200 times what it was in prehistoric times. "Our results," say Boutron and Patterson, "establish that more than 99 percent of the lead now in the troposphere of the Northern Hemisphere originates from human activities."

Ice also shows how fast the acidity of precipitation is increasing. An American team led by Paul Mayewski

Dane Penland

Air trapped in amber, such as this 20-million-year-old piece, apparently has turned out to be contaminated.

of the University of New Hampshire and Dansgaard's group in Copenhagen analyzed a recent ice core from south Greenland, covering the years 1869 to 1984. They found that the sulfate concentration has tripled since around 1900 and the nitrate concentration has doubled since around 1955, a change probably attributable to human activities.

But the most dramatic story in the ice is about carbon dioxide. A few years ago a team of American and Swiss air hunters drilled a core at Siple Station in West Antarctica, where the snow layers of the past several centuries are extremely regular and distinct. They found that the amount of carbon dioxide in the atmosphere around 1750, before James Watt built his first steam engine, was about 280 parts per million. By 1958 it had increased to about 315 parts per million. In that year an atmospheric chemist, Charles David Keeling, began monitoring the gas around the world and found the atmospheric concentration to be the same 315 parts per million.

Today the level of carbon dioxide in our atmosphere has climbed to about 350 parts per million and it continues to increase by more than one part per million per year. At this rate, the burning of fossil fuels and forests will have nearly doubled the preindustrial amount of carbon dioxide in the atmosphere by sometime in the next century.

The record in the ice also shows how ominous this change is. The Vostok core, drilled by the Soviets in East Antarctica and analyzed by the Grenoble group, is more than a mile long. It goes back all the way through the Holocene, the warm period in which we live today, to the most recent ice age, and through that to the warm period before, and through that to the penultimate ice age 160,000 years ago. The French group at Grenoble has recently published the carbon dioxide concentration in the atmosphere for the whole length of this core. The amount of carbon dioxide in the air plummets with each ice age, and shoots up as the ice age begins to break up. In warm times on the planet there is between 260 and 280 parts per million. In cold times, there is between 190 and 200.

When carbon dioxide swings, look out!

No one knows what drove carbon dioxide up and down before human beings got into the act. Cause and effect are still shrouded in mystery. But it is clear that in the past, swings in carbon dioxide have been associated with some of the biggest and fastest climate changes that our planet has ever experienced—ice ages. This connection between carbon dioxide and global temperature is so strong that climate experts consider it "remarkable confirmation" of their computers' greenhouse predictions. The rise in carbon dioxide today should be followed by a sharp rise in world temperatures tomorrow.

There is more. The fossil air in ice bubbles also shows that the concentration of methane (also known as marsh gas or natural gas) has more than doubled since the start of the Industrial Revolution. Like carbon dioxide, methane has a strong greenhouse effect. In fact there is a whole suite of greenhouse gases (including nitrous oxide, or laughing gas, and the artificial compounds known as chlorofluorocarbons) that are now piling up in the air as byproducts of the human enterprise. These trace gases threaten to double the warming effect resulting from carbon dioxide alone.

Worse yet, the history in the ice suggests that global climate can respond to accumulating stress not slowly and gradually but suddenly. Apparently Earth's climate has thresholds and can snap. Ice cores hold evidence that global climate has snapped many times in the distant past. There were sudden, high fevers within the last ice age, and there have been chilly spells—the "Little Ice Age"—since the time of warming. Global

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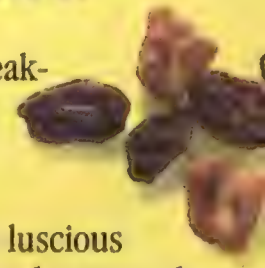

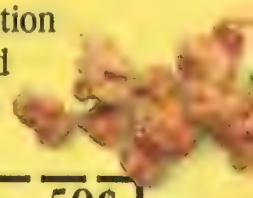

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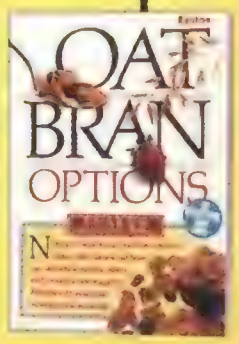

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patterns that scientists once thought virtually immutable—trade winds, ocean currents, climate zones—have flip-flopped. "For this reason, we can't expect that the greenhouse warming will be a smooth phenomenon," says Oeschger. "There might be unexpected, significant changes in the whole system."

"We see from the ice cores that we are moving toward a situation that the Earth has never known," he says. "And we are making changes on a *much* faster scale than nature has ever done before." Oeschger, a big, balding man with a gray beard, looks like a tired chess grandmaster. He sits on the terrace of the Casino Restaurant, sipping a glass of dry rosé wine. His brow is furrowed, he speaks with his chin in his hand. "There is no doubt," he says heavily. "Now the question is, what does this mean?"

Oeschger distrusts apocalyptic pronouncements. He is as cautious as a scientist as he is worried as a human being. He knows that climate predictions are plagued with even more uncertainties than weather predictions. Among other things, a global warming *could* mean more avalanches in Switzerland. It *might* raise sea level, flooding the streets of New York and London, and drowning Venice and Bangladesh. Conceivably, the West Antarctic ice sheet could surge, break off from the continent and slide into the sea, raising sea level as much as 20 feet. But none of these predictions may be correct, and in a sense they are almost details. The bottom line is that we are changing the air by as much as it changed at the start and finish of ice ages. Whatever the detailed forecast for the next 100 years, the climate changes we are in for may well be on the *scale* of ice ages.

Which way you fall does not matter

"It doesn't matter so much whether it would get warmer or colder," says Oeschger. "It's like you are walking on a rope and you throw your balance stick away. That's more or less what we are doing: destroying the stability of the system, which has been established over long periods of time. Perhaps globally it will get warmer—but it's not impossible that some places for short periods will get *colder*. It doesn't matter which side you happen to fall on."

Oeschger absentmindedly traces the outline of a stalk of wheat on his place mat with his mechanical pencil. "I don't know," he says gloomily.

"How worried about the greenhouse effect should I be?" I ask him.

"One, you should be very worried. I don't see any reason why these models shouldn't be right. The chances that we are wrong are smaller and smaller. It is also possible that it is *worse* than the models say.

"Also," says Oeschger, "I've worried about these things for 25 years. I don't want to worry all my life. That's an egoistic thing—but I think it's also a matter for the younger generation to take up these things.

"But also, I'm very much afraid of these things getting into the hands of people who do not understand it, but make a big fuss about it. I'm very much afraid of that too." He speaks uneasily of the Green Party, which is a political force in Europe, and a force among the younger scientists in his laboratory. Greens campaign

Working in a room kept well below zero, Felix Stampfli holds thousands of years of Earth history.

on a platform of radical environmental politics. They point to the Industrial Revolution and nuclear power as virtually unmitigated evils, as sins against nature. Oeschger is not an environmentalist of that stripe. He cannot feel revulsion when he contemplates the proud accomplishments of the human animal, the sum of which have led us to this pass.

"I have problems somehow with the Greens, because I like all the luxury we have. You can't turn the clock back," Oeschger says. He gestures around the lovely terrace of the Casino Restaurant. House sparrows hop on the low stone parapet, by a great pot of red geraniums, in the shade of tall horse chestnut trees. Below, Saabs and BMWs crisscross the bridge above the Aare, to and from the Historical Museum. "I *like* it."

The maître d' hurries by. Oeschger throws up one hand to catch his eye. "*Die Rechnung!*" he cries. The reckoning. The bill.

He has cut ice cores into seven-inch samples and bagged them to prevent contamination before analysis.

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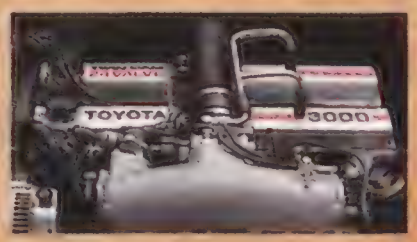

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By Richard Conniff

Flashy new 'items' make a big splash in the aquarium world

Exotic fish spawned down on the farm and an explosion of gadgets for the tank give this quaint old hobby a shockingly modern look

Robert Weintraub displays hardware and critters for sale at Martin's Aquarium, Jenkintown, Pennsylvania.

It's Saturday morning in Jenkintown, Pennsylvania, and after a 20-year absence, I am recklessly plunging back into the world of tropical fish. The venue is Martin's Aquarium, one of two stores hereabouts that bill themselves as "the world's largest aquarium." It has supermarket checkout lines and the most unusual arcade game I've ever seen: a live turtle swimming in a tank under a sign that invites customers to feed him a cricket and make his day. A mother puts a quarter in the slot. To her horror, a cockroach appears along with the cricket and makes a break for freedom.

Martin's also has more fish than I ever dreamed existed back in the days when I kept a murky 20-gallon tank in my parents' front hall. More aquatic animals, I should say. Not just red pacu piranhas and albino iridescent sharks, but jellyfish and sea slugs, nudibranchs and featherduster worms. Even live brain coral, and an Atlantic octopus for $29.95.

I'm here to look over the human crowd, too. Keeping tropical fish—the term begins to seem quaint—has become one of the nation's leading hobbies, with a tank in 1 of every 11 American homes. Business types buy oak-framed "executive aquariums" for the desktop to help them throttle back, and upscale sorts choose their fish in decorator colors: guppies for yuppies. The crowd at Martin's is suitably diverse—blue-collar families, professional women, grade school pals, connoisseurs stalking the perfect Red Sea butterfly, and a lot of beginners developing their interest on a $5-a-week budget.

Sooner or later all of them come by to admire the lionfish, a spiky creature, rust-red and white, the size of a child's fist but more dangerous. First a woman with spiky blonde hair and a white tasseled jacket stops to look—animal and prospective owner as mirror image. "Ugh!" she says and moves on. A man in a red satin bowling jacket, monogrammed "Loose Bruce," remarks that he already has a lionfish and his is bigger.

"What do you feed it?" someone inquires.

"About 30 goldfish a week." If you get too close, Bruce adds, it can kill you with a venomous spine.

I am out of my depth. When I was a fish fancier, breeding guppies seemed like a big deal and I kept nothing more exotic than a fat, grandfatherly, blue gourami. Sister Marie Dorothy, over by a tank of hum-

Tropical fish transported in a plastic bag flaunt gaudy stripes that were injected at a Singapore hatchery.

Photographs by Robert Frerck

In saltwater reef tank at Martin's, Samoan flame hawk waits near featherduster worms for prey to swim by.

Spectacular goldfish from China and Japan enliven freshwater tank. These beauties cost about $25 apiece.

drum neon tetras, is my kind of hobbyist. She sometimes threatens to feed her eighth-grade class at St. Matthew's in Philadelphia to a piranha, but in truth she is content with platys and swordtails. Other nuns come to her room to contemplate the fish. "There's a restfulness," she says. She looks over all the strange and lovely creatures on display and adds, "I think God must've laughed sometimes when He made them."

Restfulness is one of the driving forces in the aquarium business right now. Back in 1983, an ecologist at the University of Pennsylvania named Alan M. Beck demonstrated that contemplating a fish tank can lower your blood pressure and heart rate. It worked much like Transcendental Meditation, according to Beck and his coauthors, but without "the cultic apparatus of a hairy guru." The idea caught on instantly among the vast populace who prefer angelfish to maharishis, and pet shop owners have had reason ever since to invoke Beck's name with reverence. Fish tanks have also become popular lately for more mundane reasons: they fit well in an apartment or condominium, and the animals they accommodate generally don't require their human caretakers to be there every day. Also, fish don't bite the mailman. In 1988, Americans spent about $1 billion on aquarium livestock, equipment and food. According to one industry survey, the hobby has grown 25 percent in the past two years.

But if people get started in the hobby for its practical appeal, many find themselves drawn deeper and deeper by the addictive charms of new hardware, new fish, or—the fatal combination—both. This is where the aquarium game really seems to have changed since my

Another member of the reef community, Australian melanopus clownfish rests over coral from Indonesia.

Blue line clownfish swimming toward coral often "sits" in the white-tipped ritteri anemone at far right.

day. The cultic apparatus turns out to be considerable. No maharishi has ever conceived of such a varied and imaginative marketing machine. In the aisles at Martin's, you can find an endless supply of aquarium furnishings, both high-tech and lowbrow. You can outfit your tank with an "action skeleton" that turns the wheel of a shipwreck for $7.49, or you can spend $1,600 for the hardware you need to keep a real coral reef alive. You can decorate the back of your aquarium with Roll-A-Scene, a wallpaper that costs $1.19 a running foot, or you can blow the rent on protein skimmers, dry-wet filtration systems, acrylic tanks, submersible powerheads for under-gravel filter systems, even electronic monitoring devices with digital readouts. One commentator suggests that "apparatophiliacs" who relentlessly accumulate every new aquarium gadget often die as a result of closet cave-ins.

Addicts of the other variety—diagnosed by the same source as victims of "piscine accumulitis"—come back to the shop week after week looking for novelty in the fish themselves. They may not buy the $40 lionfish or the $240 frontosa with the profile like a 747, but they come to admire them. And even if they leave with 99-cent guppies, they are likely to be exotic guppies. The tried-and-true guppy varieties of my childhood, male or female, have given way to 40 or more "items"—industry jargon for breedlines of distinct color, size or configuration—among them blond tuxedo delta guppies and red cobra tails. The latter look like drab little souls, possibly suffering midlife crisis, who have stuffed themselves into the sort of gaudy dress a mariachi singer would wear.

If all this leaves me delighted but also a little dumbfounded, I am not alone. At a Long Island pet shop recently, a customer had a question about a new type of glass fish. To satisfy the constant clamor for something different, Singapore fish farmers have lately learned to "paint" a brilliant stripe down the backs of these otherwise colorless creatures by injecting fluorescent dye. What the customer wanted to know was: If you crossed a fish painted blue with another painted red, would the offspring be purple?

At 7 on a weekday morning, in a one-story cinderblock building outside Tampa, Florida, workers hurry amid the waterfall roar of thousands of fish tanks. A woman in wading boots carries three plastic buckets in each hand and a computer printout between her teeth. She stops at a tank and scoops up a mess of sunset variatus, then carefully lets 25 of them swim over a lowered corner of her net into one of the buckets. She does the same with 25 medium neon tetras, a dozen medium redtail sharks, a dozen rasbora hets, checking off each item on her printout. Segrest Farms, one of several fish wholesalers in the Tampa area, does a $5-million-a-year business supplying pet shops in this country and Canada with roughly 3,000 freshwater and marine items. The items move by the bucketful to a conveyor, where other workers bag the fish, add a squealing burst of oxygen, then seal off the bags with a tying machine and pack them in shipping boxes. Thus

The fish Richard Conniff is most interested in these days are the ones that he finds on his plate. He wrote about supermarkets in last November's issue.

270,000 fish come out of this building each week in water spiked with tranquilizer for the flight to such destinations as Gilded Guppy #2 in St. Louis and We Ain't Just Fish in Farmingdale, New York.

The flat countryside around these parts is the center of the wholesale tropical fish trade in the United States. Distributors and fish farmers, who tend to be secretive and competitive, are bunched together in alarming proximity on both sides of U.S. Highway 41 southeast of the city. Some of the fish that move through here are caught wild in the Amazon or in Africa's Lake Malawi (SMITHSONIAN, December 1988). Some come from the Philippines, which supplies the bulk of the fast-growing marine aquarium trade; but freshwater fish are the big business here and they come not from the wild, for the most part, but from farms. Though fish farmers in Singapore, Bangkok and Hong Kong dominate the trade, Florida's 300 or so aquaculturists say they are gaining on the competition.

It looks easy. You dig a bunch of ponds, each 50 or 100 feet long, grow some plankton as a natural food source, then add anywhere from 10,000 to 180,000 fish fry per pond and let them eat. But this is a labor-intensive business, because the fish must be handled delicately enough to sell not by the ton but one at a time, as pet shop specimens. Don Munden of Lakeland quit dentistry a few years ago to go into business breeding cichlids from the Rift Lakes of Africa. "I used to work 30 hours a week and play golf every other day," he says. "Now I work seven days a week, all day long, and in summer it's busier. People would not believe how hard it is."

Marie Richardson consults computer printout before filling order at Segrest Farms, a Florida wholesaler.

The fish farmers say doing it right takes a lot of "slimy thumb" know-how. If the plankton doesn't bloom just when the fry are ready to leave the hatchery, the fish can starve overnight. Insects, birds, snakes, turtles and humans can steal your profits. Parasitic infestations are a constant danger. If the weather changes and the oxygen level dips, a whole pond can go belly-up at the peak of production. Or you can do everything right, wind up with a lot of the wrong kind of fish and be forced to sell at a loss.

But the right kind of fish at the right time can earn big money. A few years ago, for instance, farmers in Thailand learned how to breed redtail sharks, a local species, by killing some adult fish and using hormones from their pituitary glands to bring captive breeders into season. Then, one of the Florida farms, Ekk-Will in Gibsonton, figured out a cheaper way to do this, using off-the-shelf commercial hormones. Mike Hennessy of Ekk-Will estimates that the new item, one of about 90 the company raises, was worth $25,000 to $100,000 a month in the first year.

Exploiting niches in the marketplace

The demand for novelty means that research and development opportunities abound; it is a matter of filling small niches in a vast market. Joe Diaz of 5-D Tropical in Plant City believes a two-inch-long blue-eyed *Plecostomus*, a kind of catfish, could earn him $50,000 a week. Those from the wild grow to be about eight inches long and pet shops have to get $25-30 for them. What the market needs now, says Diaz, is a downsized, low-budget, homegrown version. He has researchers working on it.

Until fairly recently, Tampa's tropical fish industry did not know much about research and development. It started to modernize partly because Asian aquaculture came on strong in the 1970s and partly because the Hennessys—Mike, his brother Tim and Tim's wife, Sherry—entered the business early in this decade. The Hennessys have slimy thumbs, and also college degrees in subjects like marketing, ocean engineering and conservation biology. They began building a well-mixed "portfolio" of fish to balance out market swings, and

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At Ekk-Will hatchery, Tim Hennessy checks eggs of artificially spawned fish to gauge maturation level.

they also started borrowing production techniques that were well established in trout hatcheries and elsewhere but new to tropical fish farming.

In the hatchery at Ekk-Will, Tim Hennessy bends over a modified concrete burial vault, the industry's standard holding tank, and nets up a Congo tetra. Gently, he runs thumb and forefinger down her flanks, and pink liquid dimpled with eggs spurts out like juice from a grapefruit. "Stripping" eggs and then "milking" males to artificially fertilize them is one of the techniques the Hennessys introduced. Apart from allowing a hatchery to schedule production more precisely and to breed fish that won't reproduce on their own, such techniques have also made selective breeding easier. From one tank Hennessy nets up a black tetra from the upper Amazon, then the same fish with elongated fins from an adjacent tank, then a long-finned version in white. He lets me take a good look at the white one. "That fish is as pretty as the one you started with," he says, "and it's a whole other item." He nets up yet another version. "Here we're trying to get some black back into the fins, just to have something different. That's what you can do with these techniques." He is anxious to apply truly newfangled methods with names like "gyogenesis" and "triploiding" in the quest for new items. God hardly has time to stop laughing.

But the secret to breeding a prized fish often turns out to be a simple thing—the right diet or the quality of the water—and this is especially true with saltwater tropical fish, the fastest-growing segment of the aquarium business and also the most controversial. In the Philippines, many collectors use cyanide to stun fish for easy capture. The International Marinelife Alliance says this practice kills fish and the coral reefs they inhabit. The pet industry replies that only 30-50 percent of fish from the Philippines are collected with cyanide rather than nets, and blames coral reef destruction on other causes. The issue remains a sticking point in a business where many of the customers consider themselves environmentalists.

On a resort island in the Bahamas, southeast of Florida, in an open building the size of a football field, Aqualife Research Corporation has learned to breed ten saltwater species, including clownfish and neon gobis normally found in the Philippines. The little tricks of the trade include obvious things like supplying the clownfish with anemones so the fish can live among the anemones' tentacles as they do in the wild. But marine aquaculture is an economic as well as a scientific problem; the captive-bred fish cost three times as much as the wild-caught competition. On the other hand they live longer than wild-caught fish, which often die from the delayed effects of cyanide. The challenge, says Godfrey Waugh, general manager of Aqualife, is to educate consumers to this difference. He says that although business has grown 400 percent in the past year, current sales, at 25,000 fish a month, remain minuscule. The company is aiming now to breed marine angelfish, a popular item with the troublesome habit of scattering its eggs, which makes incubation difficult. How will researchers overcome the problem? Waugh says it is a trade secret.

Both the old-time farmers and the high-tech types live in fear of aquarium espionage. There is good reason. It would be easy enough for a competitor to sit down in a roadside tavern on Highway 41 and offer a

Fish farmer Donald Graves, holding tub, supervises workers harvesting gold gouramis from a rearing pond.

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Rare cichlid, nicknamed Tootsie because it can change from male to female, stations itself near tank filter.

Jaguar catfish, named for pattern on its smooth skin, clasps collector Ginny Eckstein's fingers with fins.

Sucker-mouthed catfish, called a sailfin pleco, swims toward driftwood. Sucking disk protrudes from snout.

minimum-wage worker $1,000 for a pirated breeding pair of a new item. Ekk-Will lost several breeders to piracy a few years ago after starting work on the redtail shark. Careless talk can be even more costly.

"See 'em on the bottom there?" Mike Hennessy asks, indicating little mobile specks in a transparent 50-gallon basin. "There's 10,000 fry in this basin, 25,000 total in the building. They'll be worth $15 apiece as adults. They're a new item for the industry, anywhere. You develop a technique and then if one farmer hears you're using a certain spawning medium, vegetation or whatever, it'll click. He knows what tank you spawned 'em in and how you did it, and then we won't be getting $15 a fish because the market will be flooded."

Hennessy does not mean to give the wrong impression of the business; it is friendly—just a little cautious, he says. But, if I want to see the kind of problems a fish farmer can have, he suggests a visit to Donald Graves, a gourami farmer in Ruskin.

On guard against fish rustlers

Graves stands six feet four, weighs 270 pounds, wears a yellowing beard and a straw hat hung with fishing lures. He is heavily armed and perennially cautious. The fish he raises, green kissers, pink kissers, thick-lipped gouramis, make him especially vulnerable to piracy. They are surface breathers, which means a farmer can pack more of them into a pond—and thieves can pull more out in a single hit. "They can come out of here with a thousand fish in 15 minutes," Graves tells me.

Over the years, gourami rustlers have evaded Graves' detection by covering the lens of his infrared surveillance device with electrician's putty. He has been victimized by inside men. "One time I lay out there in the damned field with a shotgun 14 nights in a row," he says, "but they knew it and they wouldn't bother me." Another time, the morning after a hit, he got a tip that a neighboring farmer had suddenly acquired 200 opaline gouramis. The farmer said he'd pulled them out of his own pond; likewise, several thousand suspiciously familiar gold gouramis. "A gourami has a fingerprint," Graves says. "I can look at five points—a little bent-up nose, a shorter body—and say, 'That's my fish.' But prove to the sheriff you know what you're talking about." You cannot brand a pink kisser.

One night not long ago, Graves' wife woke him and said she'd heard a van go around the block twice. "I went out with a shotgun and worked the dark corners, all the places you'd think they'd be. I had seven damned buckshot in the gun and five on the side in case I got into a firefight." He saw nothing, went back to bed and found his wife gone. "I figured she was outside. Then I heard a little *crack*, like a rafter in the house popping. I said, 'Somebody shot her with a .22.' I went out like

Eckstein, a catfish specialist, siphons water from one of the 140 tanks in her Sayville, New York, home. She says it's a mistake to change all of the water in a tank at once; it puts fish under too much stress.

a damned cat. I went into the fish house, crawling around looking under the tanks. She was outside with a .44 that had a real hair trigger on it. I made a noise —and she turned around and dropped that gun down and caught me right through the shoulder." He pulls aside the neck of his T-shirt to reveal a ragged gulley running across the top of his left shoulder.

Out of my depth once again.

Keeping tropical fish is supposed to be a tame hobby—something you do to teach the kids about life and death, or because you don't want to get stuck walking a dog. I once heard my parents brag to a guest that they'd never had to tell me about sex because I'd learned it all from my guppies. (Mom, Dad, I think you should know that guppies are notoriously random in their matings. Also, they eat their young.) It turns out, though, that fewer than 10 percent of the estimated 20 million aquarium hobbyists in this country are children. According to a recent survey, most are college educated (51 percent), female (58 percent) and between the ages of 21 and 49 (80 percent).

In the course of finding out what keeps them interested, I wind up one day in Ginny Eckstein's kitchen in Sayville, New York. Eckstein is such a serious hobbyist that she keeps dead fish: she pulls a half-dozen specimens out of the freezer, then points to an instant-coffee jar in which an autopsied *Corydoras* floats upside-down in formaldehyde. Carl Ferraris, an ichthyologist from the American Museum of Natural History, comes by regularly to collect the more interesting specimens, and to catch up on some of the new and amazing things Eckstein has learned.

Eckstein was a bartender with a high school education in 1979 when she noticed two cichlids fighting off the other fish in a corner of her husband's aquarium. They were demonstrating the fierce parental-care characteristic of cichlids (listen up, guppies!) and Eckstein insisted on getting a separate tank to help them protect their babies. On a wall nearby, she now has a needlepoint inscription saying "Most things in life are easier to get into than out of" and in her basement she has 100 active fish tanks.

She and her husband, Charlie, turned out to have mutually reinforcing addictions. He is an apparatophiliac and runs an aquarium supply business out of their home. She suffers from piscine accumulitis. Fish

A sucker-mouthed catfish grips tank glass, revealing teeth used to rasp wood it relies on as part of diet.

take up all of their five-room house except the bathroom. When Charlie gave Ginny a microscope for Valentine's Day, it made them both happy.

She looks at the autopsied *Corydoras* in the coffee jar and remarks, "If anybody had ever told me I'd be cutting up fish with a razor blade! The first time I changed a tank with a siphon hose and got dirty 'fish water' in my mouth, I brushed my tongue, I brushed my teeth, I gargled. I did not think I was going to live through it." Since then, she has learned to refer to the stuff at the bottom of the tank by the hobbyist's euphemism, fish mulm. "I just wipe my mouth very ladylike on my shoulder and keep siphoning." Her condition has advanced to the point where she will feed her fish a glistening knot of tubifex worms and a moment later stuff a doughnut in her mouth with the same hand. To other hobbyists, she speaks mostly in Latin: "*Pterogoplichthys* and *Pseudorhinolepis* can be violently intolerant of conspecifics." Recently, after a 20-inch catfish spined her finger, she went to the hospital and told the nurse she had been spined by a *Sorubmichthys planiceps*. The nurse wrote down "Fish bite." The catfish recovered, as did Eckstein, who is by now immune to the hazards and indignities of her hobby.

In her basement, I can tell right away that what keeps her fascinated with tropical fish is the opportunity to observe animal behavior close up, behavior that is at times as strange and wondrous as anything that ever happened in *The Twilight Zone*. "Anybody can keep pretty fish," Eckstein says, but she has come to specialize in catfish because they do so many things.

Collectors love to watch bowl games

A 30-inch-long catfish named Norton (I didn't quite catch the Latin name) rises to the surface with his foot-long barbels, or whiskers, trailing behind and lips a krill from her fingertips. Because fish are often hard to observe in the wild, Eckstein says, and because scientists tend to think mostly in terms of taxonomy and systematics, a hobbyist in her basement can witness behaviors no one else has even imagined. She points out a tank of South American catfish that do not yet have a Latin name because science has never heard of them. She spotted them in a wholesaler's warehouse misidentified as another species in the same genus and uttered a sentence symptomatic of acute accumulitis: "I'll take the tank."

Because these fish are nocturnal, she began watching them at night under a red light. At first the males had only the faintest little barbels, like a painted mustache, over the mouth. Then the barbels started to develop tiny hooks and the fins became elongated. One night when she noticed two individuals at the bottom of the tank, it dawned on her that the male was using his hooked barbels to grasp the female and that she was seeing the first known instance of internal fertilization in the genus. After what she calls a "weeklong orgy," the hooks and the elongated fins rapidly vanished and everybody swam around looking innocent. "That can't happen," said Carl Ferraris. "Those fins are bony." Eckstein replied that it was magic. She put two individuals in the freezer to kill them for scientific specimens: "The hardest thing I ever did. It would've been easier to put a person in there." Ferraris plans to include her observations in a scientific paper.

Eckstein's basement is full of such oddities and experiments. In one tank she has a rare cichlid, originally dubbed Snaggletooth, who changed from male to female, started laying fertile eggs in the absence of a mate and was renamed Tootsie, after the Dustin Hoffman film character. (Sex reversal, while common in marine fish, was previously unknown in cichlids, which live in fresh water.) In another tank, she has an Ecuadoran catfish of a species that used to waste away

in captivity. Then a gardener in the neighborhood brought over a bag of zucchini, and Eckstein, who does not eat the stuff, tried it on her *Isorhinoloricaria festae.* Its hollow belly promptly filled out; it grew to 34 inches in length and became known in the popular literature as the "zucchini cat."

Eckstein reflects that the appeal of an aquarium is partly a matter of scientific curiosity and partly a way to find adventure. Where else, she adds, can you play God? "You're totally responsible for the life and death of that animal. You control its environment, too. With a dog, it can always run away from you." Once, like Yahweh testing Abraham, she took a couple of super-parent cichlids, commonly known as "neets," away from their young and put them in a tank divided by a sheet of glass that rested on the gravel bottom. The glass separated them from a thriving family of another cichlid variety. In a fit of jealous rage, the neets dug under the glass during the night, kidnapped the babies and brought them back to their own territory, then heaped up the gravel to keep out the natural parents so they could nurture the babies as their own. "So many interesting behaviors," Eckstein comments as she surveys her basement universe, and it is momentarily unclear whether she is referring to the fish or to the people who collect them.

Shortly after I visited Ginny Eckstein, my wife and I decided to take our children to see some fish. We went to Mystic Marine Aquarium in Connecticut. A safe destination: you can buy pictures of fish there but you can't buy live ones. If the kids wanted to learn about life and death, I figured they could do it on day trips. Everything went well. They were unimpressed, thank God, by the lionfish. Then, as we were leaving, I made the mistake of asking what they liked best. Ben, the 3-year-old, promptly announced that he wanted a California sea lion. Jamie, who is 5, thought about this for a moment, then asked if he could have a beluga whale. "Maybe next year," I said, thinking how easy it is when kids ask the impossible. Then a horrifying thought occurred to me: the way things are going in the aquarium world, with countless Hennessys and Ecksteins out there doing impossible things all the time, the boys may just get what they want.

Aptly named psychedelic fish from the Philippines raises its spiked dorsal fin in a seeming salute to green colonial polyps above featherduster, at left. Bright spectacles like this are the modern collector's delight.

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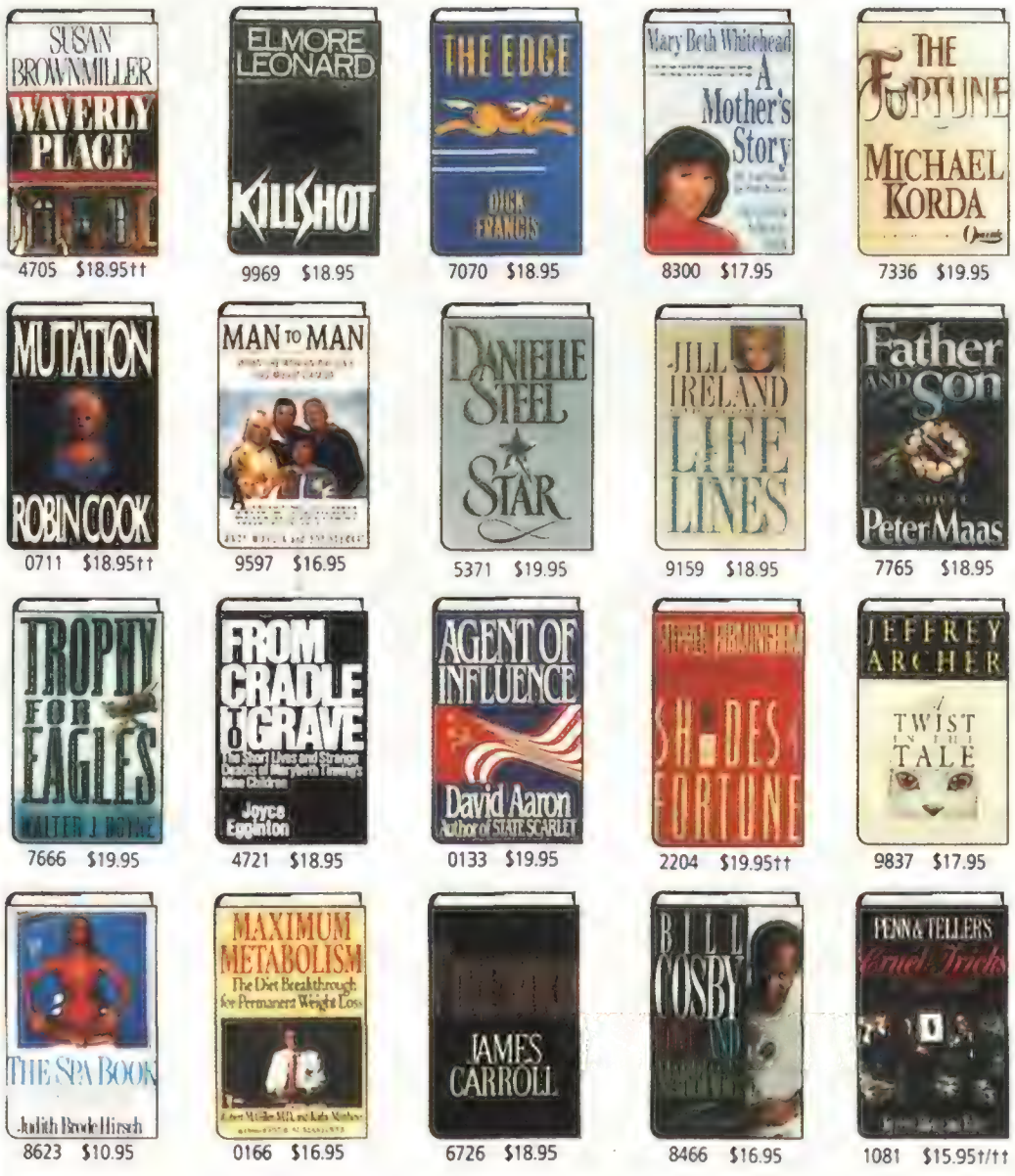

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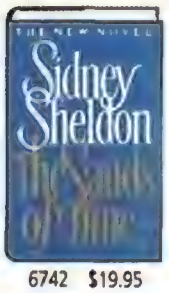

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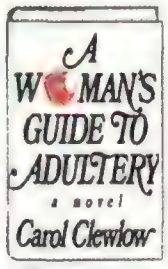

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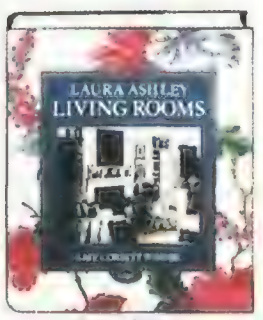

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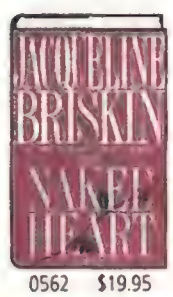

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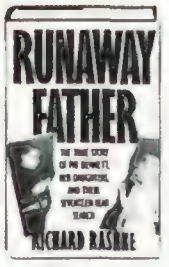

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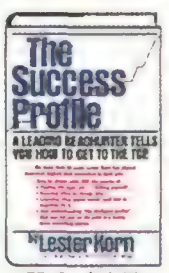

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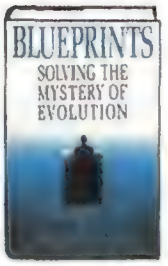

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By John Dornberg

The powerful and playful forms of Magdalena Jetelová

The Czech-born artist, who now lives in West Germany, creates sculptures that capture the tension between reality and illusion

It was a gloomy March day in Hamburg, and the rain beat relentlessly on a dilapidated building on the bleak grounds of the Kampnagel Fabrik, a defunct factory complex in which avant-garde artists and experimental drama groups now have studios and theaters.

Magdalena Jetelová, 42, émigré sculptor from Czechoslovakia and still emotionally adrift after two years of searching for a place she might eventually call home, would be working there for the next few months to create an immense wood sculpture in conjunction with a summer arts festival.

Her mind was preoccupied with the preceding night's break-in of her car, and the theft of her axes, chisels, chain saw, other woodworking tools, camera, sketches, notebooks and clothes. Her thoughts were also on the enormous 19-ton, $10,000 log of cherry mahogany that the festival organizers had obtained for her. She intended, for a start, to have it split right down the middle along its entire 30-foot length, where a natural flaw had paved the way. Would a small forklift be able to wedge apart the 4-foot-wide trunk?

Her attention was diverted from such problems with a question about the essence of her art.

"I belong to no school, no fashion, no 'ism,' no waves. Is it my strength or my weakness? I do not really know. But I do know there is no current of art, no artistic model or idol that I seek to emulate, no classification, label or category. One lives through individuality, and to remain an individual is what I always sought to do. I seek and speak in my own idiom. It is a visual language, and my sculptures, sometimes called symbols, are merely the letters of the alphabet in which I express myself, the letters of a message."

The blonde, blue-eyed woman speaks in an accented but meticulously chosen mixture of German and English. She has some doubts these days about her national and cultural identity. She is homeless because she could no longer live with the restrictions that stifled artistic expression in Prague.

"I never know what to answer when asked how I should be identified," she sighs. "People want to know whether I am a 'German artist' because I now have a West German passport, or if I should still be listed as Czech, though I emigrated from Czechoslovakia in 1985. You are supposed to have a label. I suppose the best reply is that I am Magdalena Jetelová."

That ought to suffice, for there can no longer be any doubts about her towering stature and steadily growing importance as a sculptor. Since making her West European "double debut" in 1983—first in a group show of eight "unofficial" Czech painters and sculptors in Munich, and then as part of the "New Art" exhibition at London's Tate Gallery—she has increasingly come to be recognized as a powerful and expressive artist of international significance.

Her work has been shown on three continents. She won first prize in the Philip Morris-sponsored 1986 "Dimension V" exhibition in Cologne, and was one of the featured contributors to Germany's 1987 Kassel "documenta 8" international exhibition. Her pieces are in numerous private and public collections. Yet only quite recently was she introduced to a broader American audience: in the spring of 1987 through the "Projects" series of New York's Museum of Modern Art and, in early 1988, at the Hirshhorn Museum and Sculpture Garden's show "Expressiv: Central European Art since 1960."

It is overpowering, provocative and evocative work.

Jetelová's "stairs that cannot be climbed because they lead nowhere" provided a perch in her Prague studio.

Enigmatic works of Magdalena Jetelová

Not for sitting, *The March*, a 10½-foot-tall chair of oak and iron, is a playful "anti-monument" statement.

Virtually all in wood—oak, pear, eucalyptus, makore—that is often deliberately and rudely rough-hewn, bulky, axed and striated with chisel and chain saw marks, her pieces are usually of giant proportions—up to 15 feet high and 18 feet long, and often just as wide. They combine heaviness and lightness, stability and instability, in a paradoxical and improbable juxtaposition that borders on contradiction and absurdity—as she says, on "the absurdities of life itself." She deals with such weighty themes in the forms of everyday objects: chairs, tables, staircases, houses, doors, gates.

Stairs not to climb, houses not to inhabit

Jetelová's "stairs" cannot be climbed because they lead nowhere, her "chairs" are too huge for any human being to sit on and her "houses" are too minuscule for anyone to inhabit. Because of the immense exaggeration of their proportions, the gross distortions of their shapes and the sometimes deliberate maltreatment of their surfaces, Jetelová's sculptures are imbued with intangible qualities: human frailty and futility, dynamism and energy. They also burgeon with symbolism, mysterious inner forces, and an implicit sociopolitical message that in some of her pieces becomes explosively explicit. Their intentionally mutilated surfaces—cuts, gashes, scratches and scars—conjure emotions and images of primeval eras, of traumatized survivors of suffering and torture. Simultaneously, their weight, size and solidity give the impression of support, shelter, protection, refuge, indeed of being havens of seclusion and hiding. The question of being and not being is also inherent, as is the wonderment about nature's energies and forces, which the artist feels is especially strong in wood.

"I love wood," Jetelová explains, "because it has life, a history, and radiates warmth. I try to, and can, describe everything about *how* I work," she continues, "but I cannot explain or describe the work *itself*, because questions of being and not being, of forces and energies, cannot be explained or described. They must be experienced and seen. Yes, I like to transpose, 'to put on their heads,' conventional objects. It is a kind of game of contradictions, paradoxes.

"But it is far more than a game. The size of my objects, for example, is not gamefully intended. When I make something so large, then it is to transform its reality. The chairs would lose their meaning if they were smaller, as would the houses if they were larger."

The meaning often is quite clear.

One of her earlier objects, for example, completed in the late 1970s, was a "wardrobe" and titled as such. But the huge, warped piece, hewn with an ax from pear wood, its door crazily ajar and hauntingly twisted, would only have suited the garb of Goliath,

She was "playing with reality and illusion" in an 11-foot-high chair form, now in Hirshhorn collection.

Although untitled, it is immediately identifiable as one of artist's signature images—stark, strong, moving.

and it looked as if Hercules himself had squeezed it into its absurd shape. All in all, says Czech-born Milena Kalinovska, the director of London's Riverside Studios, Jetelová's work "leaves us in little doubt that the violence done to the household is strictly comparable to the violence done to a whole country."

No less absurdly Kafkaesque in its suggestion is *The March* (opposite), made of oak in late 1982 to early 1983, and now in the permanent collection of the Pompidou Center in Paris. Ten and a half feet high, more than 7 feet wide and almost 11 in depth, it looks at first glance like a chair, albeit of outlandish dimensions and rather lopsided. The left front leg is slightly out of line and appears to be stepping ahead, while the right rear extends backward. To that rear leg Jetelová attached sharply cut and incised slabs of wood vaguely resembling feathers, then stuck in dowels reminiscent of barbs. The idea of a chair striding on its own is clearly the stuff of either fairy tales or nightmares.

More enigmatic perhaps are the artist's "stairs," of which there are several versions, all made between 1982 and 1984. The largest and most recent construction—nearly 14 feet high, almost 6 feet wide and more than 8 in depth—is the most puzzling. These massive steps that, although a bit askew, first seem reliably solid, not only lead nowhere but, near the top, double back on themselves, upside down, jutting out into space, and become unclimbable. The object is a paradox, an absurdity, and its topsy-turvy conclusion contradicts everything that stairs can and should do, except in a dream.

Houses is an ensemble of five structures of oak. The largest is a bit more than 8 feet high, the smallest a mere 5½. Two appear to be solid blocks of wood that allow no entry; on three there are visible supporting struts and what could be construed as the exposed beams of the roofs. All tilt crazily, raising doubts about their habitability, even for Lilliputians. Jetelová made

Former Newsweek *correspondent John Dornberg lives in Munich, writes on politics and art, and last wrote in* SMITHSONIAN *on art forgery detection, October 1985.*

Early work, *Wardrobe*, expresses persistent theme of transformation of simple objects into something more.

Houses, looking more like rocket launchers, give no shelter, no protection—even from foreboding smoke.

them in 1984 as an installation and as an experiment in combining her wooden objects with a video presentation, a concept she is now taking further with the use of laser-projection drawings. In the two-minute videotape, red-and-black smoke, suggesting a horrible conflagration, pours from and surrounds all of the "houses," and an ominous soundtrack creates the illusion of impending doom.

Most critics see in the work suggestions of the apocalypse or the end of civilization. Such large themes were far from her mind when she made *Houses*, she contends, although she goes on to say that the sculpture does have "something to do with endings." It was made shortly after she returned from her first visits to London and Munich, and not long before she decided to emigrate. It was a period during which she looked largely inward.

She looks even more inward in *Boban*, an 11-by-11-by-11-foot construction she made in 1986 of stripped oak logs stuck together like a stick figure. Three of the logs appear to be legs planted firmly on the ground, a fourth juts out like an arm. There are vague hints of a chair, but also of a gallows, though mostly of a mythical figure loping along. The title, she insists, in an endeavor to correct some mistranslations, is not another word for "giant" but entirely a figment of her imagination. "*Boban*'s message," she adds, "is my secret message, a tale about energies and forces of life and matter, about the mystery of being and not being."

By contrast, there is no mystery but an abundance of symbolism in the 1986 work called *Crossing*. Constructed of foot-thick chunks of oak, stuck together in a winding, twisting, 18-foot-long trail that rises from the floor to a height of about 4 feet and sits improbably on 24 spindly oak staves, it resembles at first glance a gigantic centipede. But the title is obvious: the object is *a crossing* and it *is crossing*.

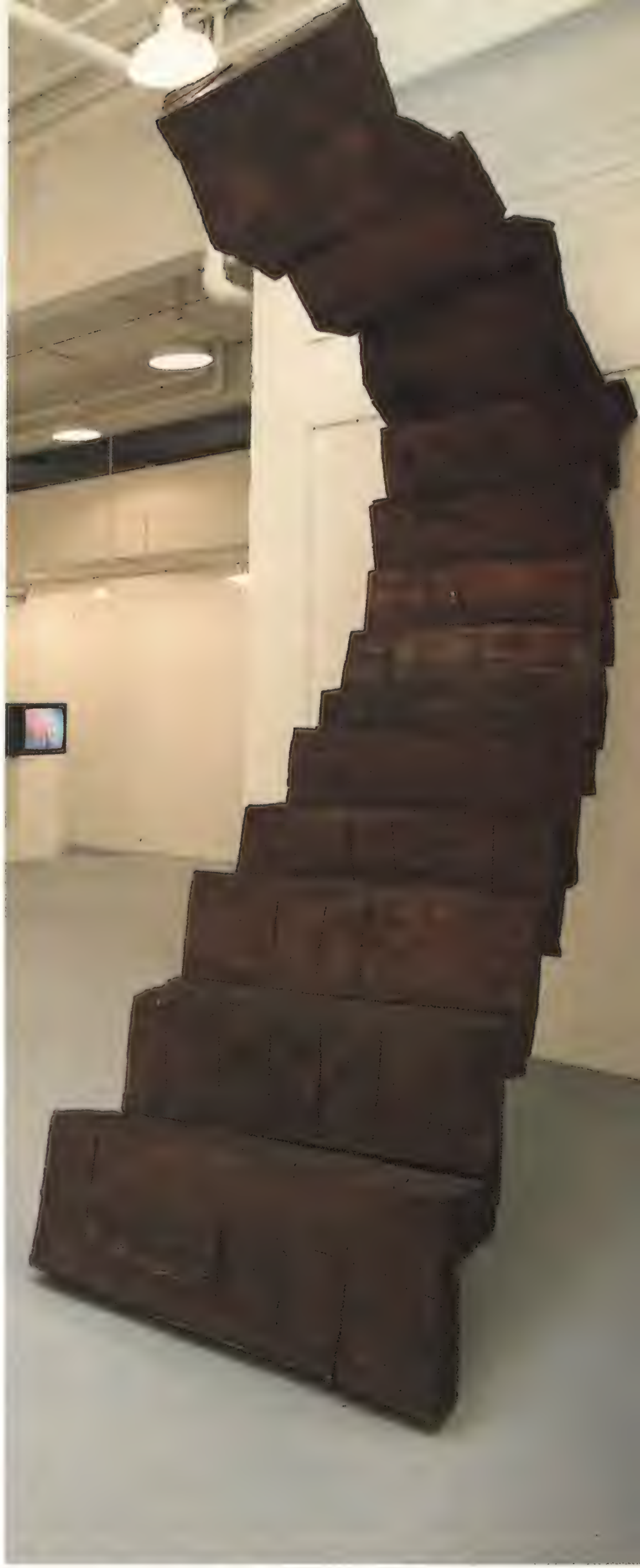
That she is a political artist is most evident in *Vykupitel*, which translates as *The Savior*. This twice life-size construction of oak blocks and iron beams is unmistakably a running human figure. Its iron arms are outstretched, like the Redeemer's, but they could also represent guns. The message—Soviet and other Warsaw Pact troops bringing "fraternal aid" to "save" Czechoslovakia from Alexander Dubček's short-lived "Socialism with a human face"—is certainly clear. Jetelová explains that the sculpture was not made until 1984, long after the 1968 invasion, but that even

so, making it was very much "like uttering a scream."

The youngest of three sisters, Jetelová was born a year after the end of World War II (two years before the Communists took power) in Semily, a small town in the Sudety Mountains near the Polish border. She grew up, studied, lived and worked in reasonable comfort in Prague until fleeing her homeland in 1985.

Her family is almost archetypal of the ethnic and cultural crosscurrents that have woven the fabric of Czechoslovakia. Though her father is Czech, her mother is Sudeten German but also one-fourth Jewish. The part-Jewishness led to her mother spending two years in Nazi concentration camps during the German occupation of Bohemia and Moravia.

Art was Jetelová's main interest in elementary school and high school. In 1965, at 19, she was admitted to Prague's Academy of Visual Arts, where she majored in sculpture and from which she graduated in 1971. There was a one-year break, 1967-68, when she had a scholarship to study at the Accademia di Brera in Milan under Italian sculptor and painter Marino Marini. A first marriage to a physician, the father of her son, Jakob, 15, ended in divorce. Her second husband, a graphic artist and the father of her daughter,



Stairway doubles back on itself, leading nowhere, its function contradicted; absurdity is again the theme.

The hands-on sculptor pounds chisel into a beam in picture taken in West Germany. Above is one of the results of such labors. *Boban* is of oak, is roughly 11 by 11 feet, and was made in Germany in 1986 mainly to create a "strong presence."

Adelka, 7, chose not to leave Czechoslovakia with her and still lives in Prague.

"So much for the facts of my life," says Jetelová with a certain finality, obviously hoping there will not be any more personal questions.

But there are, especially about why, in 1968, after the Soviet invasion, she returned to Czechoslovakia from her stint with Marini in Italy, a time when her parents and thousands of other Czechs were fleeing Westward, and also why, 17 years later, she followed in their footsteps, feeling so frustrated and restricted as an artist and individual that she sacrificed her beloved studio and garden on the outskirts of Prague, her collection of paintings and books, her cultural heritage, work in progress, friends and dissident intellectual soul mates, and an on-the-whole-harmonious marriage.

"I was not in Prague but in Italy when it all happened," she explains. "I had not personally experienced the intellectual and political ferment that brought Dubček and the reformers to power in January 1968. The invasion came just as I was finishing my year in Milan. One of my sisters had been visiting me in Italy. We rushed to Austria to meet our parents, who had fled Prague with my sister's 1-year-old baby. They had experienced the worst during the night the Soviet troops invaded and were horrified when I said I would go back. But I just could not believe that things would change so drastically, that eventually there would be a complete rollback—not just to what had been before Dubček but worse."

What came to be known as "normalization of political life"—the euphemism for the party purges and demeaning of all reformers, the abolition of newly won intellectual and cultural freedoms, and the reimposition of rigid ideological strictures on the arts—was a process that took place over a number of years. For her the pressures mounted gradually.

During this early period, after graduating from the academy, "I was able to develop myself in great calm and quite happily," she admits. To be sure, she was never a member of the official union of artists, nor did she apply to join, but she had her own studio in a suburb, got married, became a mother, lived "quite comfortably," and began moving in the unofficial art circle that was oblivious to the officially approved one and also to the regime's demands and commands.

"I would not really call it underground or outright oppositional," she says, "just unofficial, in the sense that we were rarely invited to participate in officially sanctioned shows and rarely submitted work for inclu-

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The Light and the Heavy, a column-pierced wood "table," 16 by 26 feet, was sculpted of makore (cherry mahogany) and weighs six tons. It was installed in the colonnaded rotunda of Hamburg's Kunsthalle for a summer arts festival.

sion. There was a kind of unwritten dividing line." Most shows in which she did participate were like informal get-togethers.

It was only as she began maturing as an artist, starting and seeking to really express herself through her art, that she came to sense more acutely the restrictions on individuality and creativity.

Today she can chuckle about some of the collisions. For example, one of her sculptures, *Table,* was scheduled for inclusion in an official show, then banned the evening before the exhibition was to open. Movers, who had carted the one-ton piece from Jetelová's studio, left it standing in front of the locked museum doors, inadvertently giving her an individual show.

The limitations and frustrations of Czechoslovakia's cultural winter inevitably began to take their toll. "I was trying to say something with my art," she explains, "but I was saying it to an ever smaller circle of friends and viewers. It took a while, but finally I saw I was getting nowhere, that doing and showing anything creative took more and more effort. I feared the mounting frustrations might turn me into a suicide. Still I could not decide to leave. To leave is easier than to stay, because the struggle in a totalitarian system is there, not here. Not until 1983 did I realize it was an unwinnable struggle, because the system would not change."

The turning point was her "discovery" in Prague by the Tate Gallery's Michael Compton, accompanied by Czech-born Meda Mladek of Washington, D.C., and coincidentally at about the same time, by Munich art dealer Walter Storms. Storms included two of her pieces in his May 1983 Munich show of work by eight Prague artists, and Compton put her sculpture in the Tate's "New Art" exhibition in London that September. Jetelová was allowed to attend both openings. She returned home exhilarated by the artistic freedom she had seen and experienced, but also dismayed and de-

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pressed by the frustrations and growing cultural isolation of Prague. "I knew then," she says, "that I *had* to leave—to emigrate."

That was easier thought than done. Though she was relatively free to travel, and did, she was only permitted to go alone, without her children and husband. Not until the summer of 1985 could all four journey together on a vacation to Yugoslavia. From there she and the children went by train to West Germany—to stay. Her husband, who did not want to leave Czechoslovakia, where his entire family lives, drove back to Prague alone.

"To emigrate, to become an exile, to leave behind everything and everybody, is very hard," she says haltingly. "I could and would not try to persuade or force anyone else to do it."

Logistically, the first years of exile have been a "total catastrophe" for her. "I feel like a gypsy," she says. Her legal residence is with her parents, who fled to West Germany in 1968. "But they have a tiny apartment and are already helping take care of my daughter, while my son is at a boarding school nearby. I sleep on the couch when I am there." She has another temporary pad with one of her sisters in Düsseldorf. Both sisters have also been in West Germany since 1968. In Munich she has a room in the house of friends. On weekends, wherever she is, she usually drives hundreds of miles to be with her children.

Creatively, artistically and professionally, however, exile has been even better than she hoped. She has sculpted voluminously, her work has been shown widely and is going into a growing number of collections, and she is inundated with more private offers and public commissions than she can meet, despite 10-to-12-hour working days and a head that is "bursting with ideas all pushing to come out." She is also besieged with requests to lecture.

Interested in financial rewards, which she needs, considering that an oak trunk costs between $15,000 and $35,000, she is fearful of exchanging "one unfreedom for another"—the exigencies and commercialism of the art market.

Another danger, which she discounts, is that her art and message may suffer through uprooting from all the emotional, historical, mystical and psychological peculiarities of Prague. Can Magdalena Jetelová's art

Place was done in Prague in 1985, just before the artist immigrated to West Germany. Of oak, 13 feet high, 15 feet wide and 8 feet deep, it was shown in London. It conveys the idea of protection, yet is open, askew.

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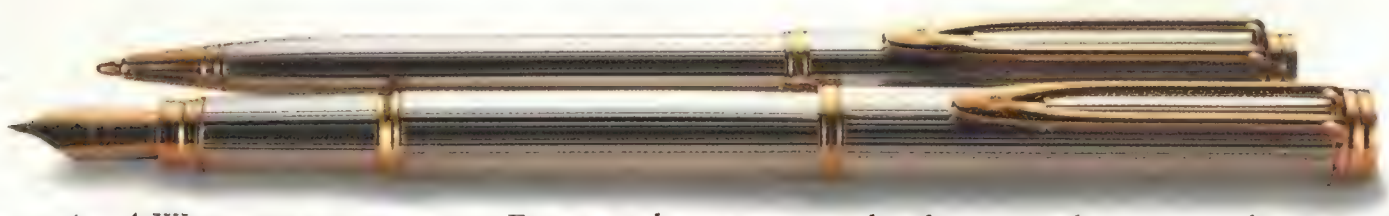

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Study of Jetelová in Germany shows her medium's bulk, texture. Opposite, a recent work titled *Chair*. More simplified than others in series, it incorporates a photographic reproduction of a laser drawing.

retain its Kafkaesque absurdities and strong impact after she has lived in affluent, glittering, commercially-minded West Germany for a longer time?

"Well," she replies, "the world in which I lived was full of absurdities. But that is not the only world full of absurdities. The theme is eternal and universal, and I see it here."

Meanwhile, her work is becoming more abstract, less representational. Though chairs, tables, stairs and houses remain the letters of her visual alphabet, they are becoming less recognizable symbols, albeit no less powerful in their emotional impact.

When she first began using wood, right after graduating from the Academy of Visual Arts, she strove for smooth and carefully finished surfaces, "like a cabinet-maker." The rudeness of the axed wood—the hatchet marks, chisel incisions and chain saw striations of its surface that characterize her later pieces—has become more pronounced.

Creating installations for specific architectural environments—indoor and outdoor—is another recent direction in which she is moving. But most important to Jetelová these days are her continuing experiments with incorporating photographic images of her laser-light drawings into the sculpture.

To watch her prepare for a piece and work on it is an impressive experience. Rarely does she make a small-scale model; just a few rough sketches. The rest is pure headwork. She attacks her logs and trunks like a lumberjack, yet exercises total control over the crude tools and heavy equipment she uses to obtain precisely the effect and minute details she wants. And she has an almost mystical affection for the material. "I sense its energies, forces and life," she says, admitting that often she agonizes for days before chopping or sawing into it. And when, after months, a piece is finally finished, she adds, "it's like having given birth to a child."

Much has been said and written in attempts to compare Jetelová with other artists of her own and past generations, to peg her in niches, schools, currents and "isms." There are references to similarities with such German painters as Anselm Kiefer and A. R. Penck, and also with the Dadaists and Marcel Duchamp. She is greatly amused when such passages from reviews are read to her.

But where, as an artist, to place her?

"I am very happy to be an individual, to not belong to any school, to any current," she answers. "And it is very good when one knows what one wants to do, to recognize, and to say. That is what I always want to keep on doing."

That is why, even as an émigré, uprooted by choice from her homeland and the culture that formed her, and still a bit bewildered by her new world, she remains Magdalena Jetelová: sculptor in wood of the absurdities of life.

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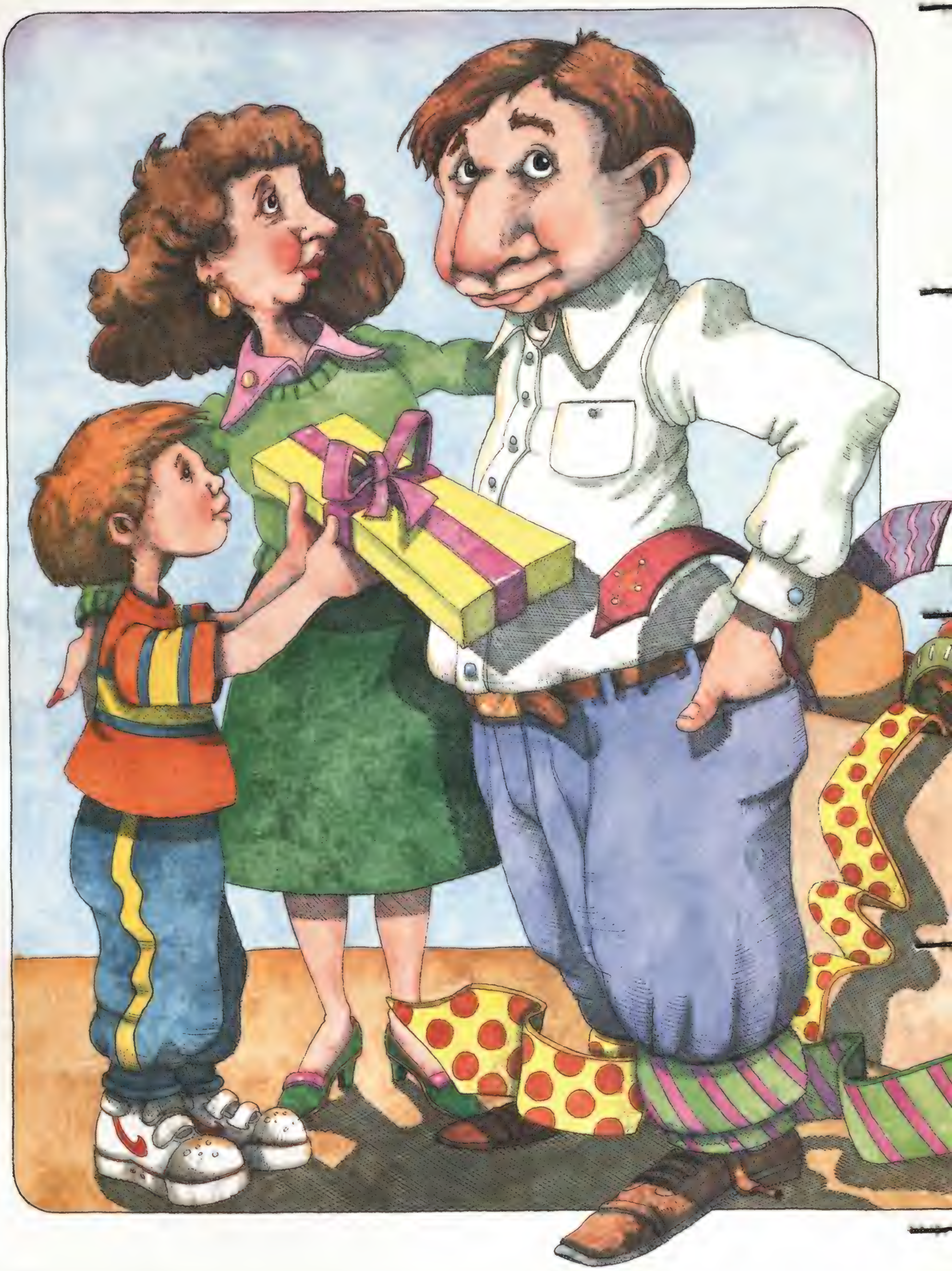

By Thomas H. Wolf

A hangdog look for dads with the ties that bind

Once a portable first-aid kit, the currently useless cravat has become big business, and a cross to bear for domesticated males

Father's Day. The signal for an army of mothers and wives, sons and daughters—even some sweethearts—to march to the store to buy a tie for dear old Dad. Before his Day (known in the apparel industry as the "Second Christmas") is over, nearly 20 million articles of neckwear will have been foisted on American males. It is an outpouring of almost $200 million worth of what may well be love, but just might be a way for women (who buy 60 percent of all ties sold) to get even.

The history of the human race is a history of self-torture—suffering to be beautiful, as David Kunzle puts it in his book *Fashion and Fetishism.* His list of implements of torture primarily concerns women: Chinese foot-binding, tight-laced corsets, narrow shoes, stiletto heels. The only two aimed at men are the necktie and especially the high stiff collar, a kind of man killer that has long since gone the way of the straight razor and other dangerous instruments. Why does the tie remain?

There are two views of the matter. The old tie school basks in the psychological comfort that comes from knowing one is dressed according to the demands

Illustrations by Lane Yerkes

Chest display has been part of male behavior since the Stone Age, when men began wearing beads.

of the day's fashion. Such conformists report actual malaise when they sally forth sans suitable strips of cloth clutching at the neck.

"So's your old man!" retorts the no-tie school, a membership that has included such varied and worthy members as George Gordon, Lord Byron, romantic poet; Bill Veeck, romantic baseball entrepreneur; Tom Huebner, San Antonio's former city manager, who came a cropper when he tried to establish a tieless dress code there; and your humble servant, me. Not that a tie is useless. It is quite appropriate for a small number of formal occasions, such as weddings and funerals. It provides entry into a number of expensive establishments, for those who can afford them. And it is the perfect gift: relatively cheap, quite impersonal, easy to buy, and equally easy for the recipient to dispose of if it is atrocious. What's more, women don't normally wear them, so they can't go rummaging through your closet to borrow one—as sons do.

Still in all a tie, my school holds, is ridiculous. It has no practical function. It does not keep the neck clean or warm. It does not keep out the rain. Unlike the fig leaf, it does not even afford a modicum of modesty. There was a time, it is true, when one predecessor of the four-in-hand necktie served as a kind of portable first-aid kit. But today, like lipstick or earrings or nail polish, a cravat, to use its generic name, is nothing more than a fashion accessory (except in Spain: there, when angered by another man, you can point to your tie—the message, "Your wife gave me this"). Alone among the articles of male dress, the necktie bears scant relationship to the size or shape of its wearer's body. Yet according to experts it is the tie alone that proclaims the size and shape of the wearer's persona. This has been the case for a long time, with sartorial options steadily dwindling. A century ago Oscar Wilde could complain, "I find an ever-growing difficulty in expressing my originality through my choice of waistcoats and cravats." With waistcoats now all but extinct, only the cravat remains for those needing to flaunt some shred of originality or taste—although in these yuppie days a case can be made for the notion that *not* wearing a tie is a truer badge of originality.

Beware the man with a red tie

Be that as it may, the language of costume has always spoken of the nuances of taste and class. In her fashion history *The Male Image* Penelope Byrde quotes from the British journal *Tailor & Cutter* of a century ago: "How is it that if anyone describes a man as wearing a red necktie, nothing further need be said; you imagine a horsey individual or a sporting publican with a suit of loud checks, a loud voice, and much jewellery." No less a paragon of propriety than Lord Chesterfield

Before "modern" neckties, gentlemen's shirts came complete with long ends of embroidered lace attached at the collar. These were knotted at the neck (the original sin) and then hung down over the shirtfront.

declared, "Most of our young fellows here, display some character or other by their dress. . . ."

In April 1949 the editors of *Esquire* magazine restated this notion in somewhat more modern dress: "You may think your face is a permanent fixture—and that in the normal course of things, only age, a hangover, or a punch in the eye can change it—but the truth is that you can do awful things to it with the wrong tie-and-shirt combination." Apparently, it has ever been thus—at least for those who believe in wearing their hearts on their necks, as it were. King Edward VII of England could have an entire evening ruined by a guest wearing a tie inappropriate to the occasion. That malaise was also reflected on this side of the Atlantic just as Edward was about to ascend his throne. In 1897, "Sears, Roebuck & Co., (Incorporated), Cheapest Supply House on Earth, Chicago," ran a full-page ad featuring "Hot Weather Neckwear." "An untied man," it announced, "is ever an untidy man."

Recently, John Molloy, who makes a handsome living advising corporations on appropriate dress for their sales forces, went to great lengths to demonstrate his conviction that a man's tie states "who he is and who he is trying to be." He sent a group of researchers to the Port Authority Bus Terminal in New York City. Some were wearing what he calls "upper-class" ties; some, "blue-collar" ties; and some were wearing no tie at all. He instructed them to panhandle. At the end of one hour, each man's take reflected his employer's philosophy. The men wearing upper-class neckwear had garnered $34.60, compared with $9.12 for the blue-collar group, and a piddling $8.42 for the tieless. (I should note, however, that $8.42 is more than twice the minimum wage and that there are those, trust me, who believe $34.60 to be grossly inadequate compensation for standing in the midsummer Manhattan sun for five minutes, let alone an hour, throat inexorably throttled by a colored rag.)

How and where did the notion of displaying something around the neck—for good or for ill—begin? The answer is that no one knows. This fall the Smithsonian's National Museum of American History will open an exhibit entitled "Men and Women: Costume, Power, and Gender." In *Men and Women: Dressing the Part*, a book associated with the show, Valerie Steele states that no one knows why or where the first human being turned up wearing *any* article of clothing. "Anthropologists no longer believe that shame or modesty led to the development of clothes," she writes. "In Tierra del Fuego, Darwin observed icy sleet forming and melting on the skin of Indians. Picts, ancient inhabitants of Britain, were found in Scotland by Caesar's Romans running nude."

Chest display, of course, seems to have been part of

The author, a former vice president of ABC News, has served during the past eight years as the Smithsonian Institution's television consultant.

When a gent is in company distinguished for its elegance, H. le Blanc's 1828 fashion manual says, he will discover the "most critical and scrutinising examination will be made of the *set* of his Cravat."

male behavior ever since the Stone Age, when tribes began wearing beads and bangles. So neckwear has a history that dates back at least 30,000 years. But neckties, more or less as we know them today, made their first appearance in the middle of the 17th century, probably (where else?) in England. Before this time, gentlemen's shirts came complete with long ends of embroidered lace attached at the collar. These were knotted at the neck (the original sin) and hung down over the shirtfront. But by around 1650 the tatted lace became too bulky to knot, so gentlemen started to wear mufflerlike neckcloths separate from their shirts.

At first these were simply lengths of linen. Like a long dinner napkin that has to be folded to fit into a napkin holder, the cloth had to be folded to a width that would fit around the neck. If you tied it in front, like a scarf, it was called a cravat. If you preferred not to fold the cloth for yourself, you could find material already sewn to fit your neck—like a pre-tied bow tie. It was fastened at the back of the neck with hook or buckle or knot and for some reason was called a stock.

Various theories explain the origin of these rings around the collar—and, not incidentally, your neck. One holds that physicians in the Middle Ages, believing that bodily ills enter through the throat, recommended neckcloths for protection. Another suggests that a swatch of heavy cloth around the neck served as a kind of shield against sword or spear in battle. Jean Druesedow of the Costume Institute at New York's Metropolitan Museum of Art supports a simpler thesis: for soldiers and men who dueled, the neck was a handy place to carry a roll of bandaging material in case of emergency.

The origin of the name "stock" is unknown. The name "cravat" is often reported to have come from the word "Croat," after a group of Croatian mercenaries who fought alongside French troops in the early 1600s. Their uniform featured a cloth knotted around the neck. As sartorial rivals, the stock and the cravat were at each other's throats, as it were, for more than two centuries. The cravat, at first worn without starch, tended to bag, sag and roll up in front. To the rescue came George (Beau) Brummell, an officer of the 10th Light Dragoons, which happened to be the Prince of Wales' own regiment. Brummell, according to Claudia Kidwell, curator of the Smithsonian's Costume Division, "solved the problem with starch and with patience." Every day he laboriously arranged his stiffened cravat—often spoiling several before he achieved a satisfactory arrangement of folds and creases. The result was so pleasing to the Prince of Wales that he had his valets copy the procedure—thereby giving cravats a great boost in popularity. Nevertheless, the stock remained the neckwear of choice among traditionalists until somewhere early in the 19th century.

That the cravat could have remained in contention, let alone eventually won, is difficult to understand, since the stock came ready-tied, whereas the cravat required the mastery of an incredible number of knots. Penelope Byrde cites an 1828 manual by a certain H. le

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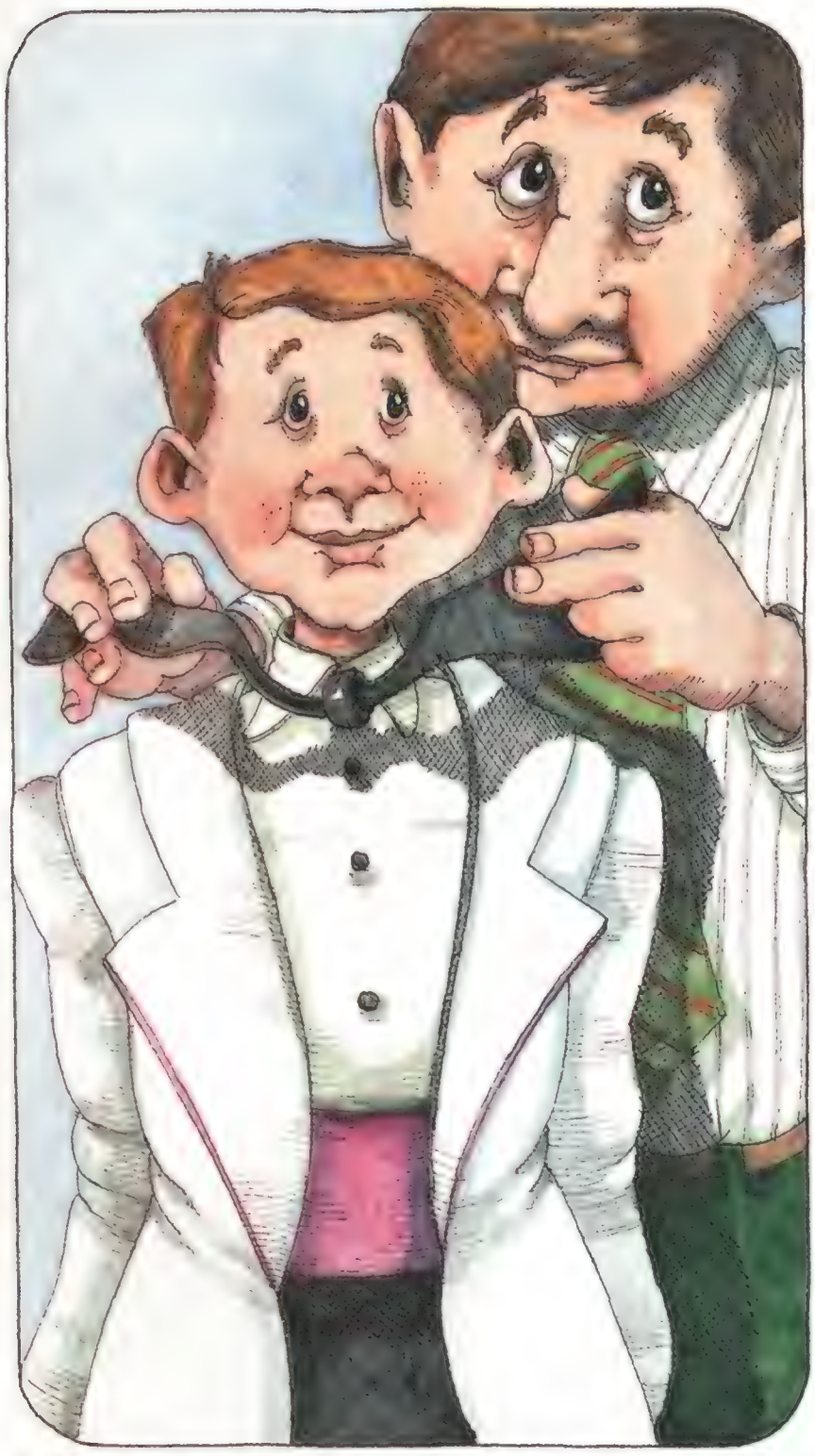
As shown, the 405 S comes with the following standard features: sunroof, air-conditioning with automatic climate control and power door locks.

Blanc that included 32 methods of tying a cravat, each with its own name. H. le Blanc wrote: "When a man of rank makes his entrée into a circle distinguished for taste and elegance . . . he will discover that his coat will attract only a slight degree of attention, but that the most critical and scrutinising examination will be made of the *set* of his Cravat. . . . if his Cravat is *savamment* [cleverly] and elegantly formed—although his coat may not be of the last *cut*—every one will rise to receive him with the most distinguished marks of respect. . . ." Scarcely able to contain his enthusiasm, Monsieur le Blanc goes on, ". . . let him speak downright nonsense he will be applauded to the skies; it will be said—'This man has critically and deeply studied the thirty-two lessons on the Art of Tying the Cravat.'"



Like his first formal prom, learning to tie a bow tie used to be part of a teenager's rite of passage.

Despite the fact that it was only fit to be tied, by the turn of the 20th century, the cravat had driven the stock from the field. Its best-known and most-enduring form has been the four-in-hand, named for the manner in which neckwear was fastened by the coachmen who drove four-horse carriages in 18th-century England. More aristocratic is the ascot, named for the neckwear chosen by the horsey set who frequented the eponymous British racetrack. It was, and is, simply a fancy scarf, often fixed in place with a jeweled stickpin. Shortly after World War I, royalty again got into the act when the Duke of Windsor began filling the wide space at his shirt collar by tying a big knot. This became known as the Windsor knot. The way to achieve it (although the Duke himself denied ever using it) is to bring the long end of the cravat back and forth into a half-dozen loops. The resulting knot is large and handsome—and, for many, a source of endless aggravation trying to get it tied right.

Of course, there is also the bow tie, whose name probably derives from the French *jabot*, the frill on a shirtfront. Not to mention a small number of regional specialties like bolo strings, held together with jeweled slides; trick ties that spit in your eye or stick a tongue in your face; even porno ties with X-rated art inside the lining, to be flashed like "feelthy" French postcards. Happily their market share is infinitesimal.

Tying one on with Dad

Whatever agonies the knots of neckties may have caused American men, none can touch the rage and despair that sometimes attends learning how to tie a bow tie. This used to be an important part of a male teenager's rite of passage—a prerequisite to a boy's first formal prom. Many a father has earned a son's eternal gratitude by standing behind him and (because Dad can't figure out how to tie the bow when he's facing it) reaching around his son's neck to achieve the magic knot while the boy watches in the mirror, certain that this art is far beyond his grasp. In our house, my father made me put my foot on a kitchen chair and practice tying the tie above my knee until, mirabile dictu, it somehow happened. It would be years before I could make it happen easily and even today, although I wear a bow often, I can't achieve an acceptable knot on the first try every time.

Needless to say, the bow has its adherents and its critics. The former include such well-known figures as historian Arthur Schlesinger jr., Senator Paul Simon of Illinois, civil liberties lawyer Joseph Rauh (who maintains that he can write several legal briefs each year in the time he saves every morning by not having to knot a four-in-hand tie), and columnist George Will. "A

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"Power ties," presumably to be worn at power lunches, were once pale yellow with dots, now run to red.

great advantage of wearing bow ties," Will has said, "is so no one will mistake you for a lawyer. . . . The bow tie wearer is an independent thinker—no wonder lawyers don't want them on juries."

Consultant John Molloy is of a different mind. "If you insist on wearing a bow tie to business—and bow tie wearers are a stubborn lot," he writes, "I suggest that you wear it with the proper accessories: a red nose and a beanie cap with a propeller. . . . In general I have found that people believe that a man in a bow tie may lie." (It is an opinion I can understand from an author whose advice to lawyers includes: "When a prosecutor is going to question your client, put him in a very dark suit, a crisp white shirt, and a bright red tie—preferably with a difficult to look at, but still elegant, pattern. Put a bright red handkerchief in his breast pocket. The combination will make it quite difficult for the jury to look at him—and the less they look, the less they will remember what he says.")

Bow or otherwise, in the United States almost 100 million ties are bought each year. Strung together, they would go more than three times around the world at its waist. Cravats have served many uses other than those intended—strangulation, both premeditated and accidental, among them. Fred Astaire often used a tie to hold up his trousers because, he maintained, he was unable to find a belt sufficiently small. Merchandisers know that ties are purchased largely on impulse, which is why you always see them up front when you enter a store. Women buy the majority of ties but rarely wear them, except when for feminism's sake they start doing things previously associated with men (though Madame de Pompadour wore little bows tied at the neck to call attention to her décolletage). More than a century ago when they first entered the business workplace, women adopted wasp-waisted shirts and flowing ties—the style the Gibson Girl would immortalize.

It is estimated that the average American male owns between 30 and 40 ties. Usually one or two have important associations, often with family rituals—as a young man quickly discovers when he first "borrows" a pet cravat from his father or brother. Tiecrafters, a New York establishment that specializes in tie cleaning, regularly gets letters from far-flung tie owners, like this one that recently came from Australia: "Our daughter cannot be married unless you can make her Daddy's special weddings-tie presentable again." (The secret to spot removal, incidentally, is to get one's four-in-hand tie—note that it requires extraordinary skill to spill food on a bow tie—to the cleaner right after the faux pas, before the gravy oxidizes and becomes an integral part of the fabric.)

About 80 percent of the ties sold in the United States are manufactured here. The business adds up to nearly $1 billion a year. Prices start at about $2.50 and run into the thousands. A. Sulka & Company, a prestigious haberdashery, annually weaves 18-carat gold thread into a few hundred ties and reports that "they walk off the shelf" at $250 apiece. Not much compared with Countess Mara's line of cravats with real gems on them. They go for up to $5,000 each.

And, of course, the "old school" and the "club"

Being tradition-oriented—why else would suit jackets retain sleeve buttons, or trench coats keep epaulets and saber rings?—men tend to favor traditional ties. One of the most popular is the regimental rep, with diagonal stripes on ribbed fabric, connoting membership in a Guard's unit of the British Army. There are only 40 true regimentals, but the demand is so great that an additional 400 can be had that merely *seem* regimental.

In the same category belong the old school tie and the club tie. A growing number of corporations have worked the company logo into tie patterns. At least 16 divisions of Time Inc., for instance, have logo ties. (At this writing, use of any Smithsonian logo has yet to be

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"Anyone stupid enough to tie a tie too tight
probably had trouble thinking in the first place."

authorized for employee cravats, although representations of various Smithsonian interests and artifacts, starting with dinosaurs, already grace some neckwear.) Within the past few years, something called the "power tie," a field of small blue dots on a pale yellow background (or lately, a beefier red, woven style) has become a best-seller, presumably to be worn at "power lunches," though no one seems sure.

"A necktie is not the simple piece of fabric it appears to be," begins the *Tie Buyer's Handbook*, published by the Neckwear Association of America. It turns out to be a 22-step process starting with the outer fabric and ending with the bar tack, a stitch that neatly fastens the ends of the seams at the back of the widest part of the tie. These days the well-dressed gentleman's cravat is 53 to 57 inches long, and its tip "will just meet—or slightly overlap—the buckle of his belt," a neat trick in the case of those of us who prefer suspenders. For many nonlawyers and other bow tie devotees the correct width of the bow is judged to be the distance between the outside corners of the eyes.

From the beginning, as today, new fashions in neckwear have reflected the great events of the day—the Battle of Steinkirk in 1692, for example (surely, you've heard of it). There, so the story goes, French soldiers, caught by surprise, had to hurriedly twist their uniform's long cravat as they ran into battle against English and Dutch troops. From this came the popular "Steinkirk," a long strip of cloth, wound for its entire length and then passed through the bottom buttonhole of an officer's, or a gentleman's, coat. M'lord might look somewhat as though he had a longish rope around his neck but at least the tag end didn't whip in the wind.

The French Revolution played havoc with neckwear, as well as with necks. Because no one wanted to be associated with the aristocracy, the fashionable cravat of the courtiers went into hiding, and neckwear blossomed into the flowing scarves of the romantic poets and the rebellious young. Nearly 200 years later, bow ties—which had been very popular here at the start of this century—again took America by storm, following a somewhat less world-shaking event: Robert Redford's portrayal of Jay in *The Great Gatsby.*

Here come the belly-warmers again

In the normal ordering of things, however, neckties follow not great happenings, but the fashion set by designers of suits and shirts. High collars attract wide knots. Wide suit lapels dictate wide neckties. At this very moment I am told the extra-wide ties—the belly-warmers of a quarter-century ago—are slouching toward New York to be reborn. I remember them well. My son-in-law, a comedy writer, sent me one of the first five-inch-wide ties that appeared in Hollywood in the 1960s. I thought that it was a gag. I still do.

Now that you know everything you need to know about how neckties were born and how they reached us over the centuries, there is still a mystery. Why do men wear anything at all around their necks? There I can't help you. David Kunzle quotes from art historian Johann Winckelmann's *Thoughts on the Imitation of the Greeks,* published in 1755. Winckelmann was "convinced that the alleged habitual nudity of the Greeks had formed in them a superior taste as well as superior bodies, and that by dint of tight banding of neck, waist, and thigh mankind had succeeded in producing a mentally and physically degenerate race." In *Bleak House* (1853), Dickens writes of Mr. Turveydrop: "He had such a neckcloth on (puffing his very eyes out of their natural shape) and his chin and even

his ears so sunk into it, that it seemed as though he must inevitably double up, if it were cast loose. . . . As he bowed to me in that tight state, I almost believe I saw creases come into the whites of his eyes."

Ridiculous? A few years ago two researchers at Cornell University reported that the pressure of a shirt collar and tie may interfere with the supply of blood to the brain and thus adversely affect intellectual skills. The Neckwear Association scoffs, "Anyone stupid enough to tie a tie too tight probably had trouble thinking in the first place." But I don't believe it's as simple as that. What is the first thing a man does at the end of the workday? He loosens his tie, just as a lady of an earlier era happily untied her stays. And it is no coincidence that the end of a posse's search is called a "necktie party." Is there any conceivable reason that we men should have to wear anything around our necks during summer days when temperature and humidity race to see which can reach 100 first? Fashion decrees it, you say? Yes, but who decrees fashion? One must rise above it like baseball owner Bill Veeck, a pioneer protester in this field and a man who was never caught in public with a necktie.

I raise my glass to Veeck and to that glorious commonwealth, Australia. In the official guidelines for embassy personnel, it is written that the safari suit—short sleeves, no tie—is quite the proper garb for Washington, D.C., which the Aussies, bless 'em, consider a hardship post in summer. So do I. And the more I ponder the history of the modern world, the more I wonder if Karl Marx might not have pulled the whole thing off had he but transposed two letters in the Communist Manifesto and proclaimed, "Workers of the world, untie!"

In the United States nearly 100 million ties are bought each year, most of them by women for their men. If all were strung together, they would stretch more than three times around the world at its waist.

During Philippine war, in 1899, fighting Kansas 20th Brigade stops for a breather—and some beans.

By David Haward Bain

Manifest Destiny's man of the hour: Frederick Funston

Brave beyond words, filled with derring-do, the controversial Kansan fought and feuded from Cuba to the Philippines and beyond

Almost as famous for bravery as Funston, they knew he would be right there risking his neck in battle.

Having just led daredevil mission that ended the war, Funston relaxed in Conradian circumstances.

The handwritten letter arrived in Manila bearing an Oyster Bay postmark dated March 30, 1901. "My dear General," Theodore Roosevelt wrote, "I take pride in this crowning exploit of a career filled with feats of cool courage, iron endurance and gallant daring, because you have added your name to the honor roll of American worthies."

Brig. Gen. Frederick Funston must have grinned wider over this praise from the Vice President than over the bushels of letters and telegrams he had already received. Like Roosevelt, "Fightin' Fred" Funston had crammed many experiences into a rigorous lifetime. He had survived Death Valley and the Yukon; he had charged across battlefields in Cuba and the Philippines, and had emerged mostly intact and (mostly) honored. Like Roosevelt, he relished an invective-laden war of words, and shared T.R.'s enthusiasm for America's Manifest Destiny as a new major power in the world.

Now he had masterminded—and carried out—what the McKinley Administration was calling the most important single military action of the year. With incredible ingenuity and daring, he had captured the most sought-after man in the Philippines, the rebel leader Emilio Aguinaldo. Newspaper headlines trumpeted the latest of Funston's feats. The War Department and many editorialists were predicting that, thanks to Funston, the bloody, blundering guerrilla war against Filipino nationalists could now be brought to an end. There was talk of running the two tough-talking, ambitious war heroes—Teddy and Fightin' Fred—on the 1904 Presidential ticket.

Only one year later, dashing all of Funston's hopes for a political career, Roosevelt was to change his mind.

Photo: Aaron Rezny

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So would many others. T.R. even inserted a formal letter of censure in the general's file and forbade him to make any more public utterances—much to the relief of Funston's friends, as well as his enemies. There would be no further talk about "Vice President Funston."

Despite a dramatic fall from grace that arguably showed all the elements of classical tragedy, the curtain was not ready to fall on this controversial and historically revealing life. For Funston's stormy career spanned America's prodigious historical leap between the Civil War and World War I. Raw-edged and rambunctious, impetuous and improvisational, Funston was in many ways emblematic of his country's 19th-century personality and aspirations. As the United States finally tamed a continent and began peering across the seas, Funston matched our restless thrust, gaining as much fame from fearless exploits as he did notoriety for ignoring the rules.

He was born in the heartland on November 19, 1865, in New Carlisle, Ohio. His mother, Ann, was a great-grandniece of Daniel Boone; after the family moved to Iola, Kansas, his father, Edward, won a name as "Fog-

Stateside, Funston wrote of Arctic trip, had himself photographed in parka.

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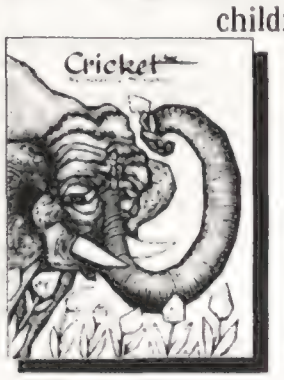

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horn Funston, the Farmer's Friend," a stem-winding, power-brokering politician who served for years in the U.S. House of Representatives. In every way, the boy grew up in his father's shadow. Foghorn was six feet two and well over 200 pounds. Though Frederick always carried himself like a soldier, he grew to exactly five feet four inches, and most of his life he weighed less than 100 pounds. Much like a slightly older contemporary of his, a squinty New York weakling by the name of Roosevelt, Funston exercised relentlessly.

Paradoxically, the stronger he got, the thinner his skin seemed to grow. Stories of fights reverberate through his boyhood. Still, he managed to spend hours reading poetry, the classics, science and history, as well as books about explorers and cowboys, soldiers and privateers. He carried the reading habit to the University of Kansas in 1886, where he became a close friend of William Allen White, later a famous newspaperman. Like White, Fred Funston was an indifferent student, known more for jokes and liquored-up fights than study. When lack of money made college life difficult, Funston left the campus for long periods to work.

During one such hiatus, he tried following White into journalism, becoming a police reporter at the *Kansas City Journal.* The seamy night life of the city's North End appealed to him and White, who were inseparable. "We roamed the city like sheep-killing dogs," White would recall a half-century later. When he moved on to the *Fort Smith Tribune* in western Arkansas, Funston thought he was moving up as well, but he turned out to be the only Republican in a Democratic town. Trouble naturally ensued. Left in charge when the editor went out of town, Funston wrote an editorial castigating Democratic readers and enthusiastically endorsing Republican views. When an angry mob appeared to burn the paper down, Funston stoutly defended the place—

A commercial tie-in used Funston's fame to help sell Cuban cigars.

until the editor rushed back to print an apology and fire the cocky young Kansan.

After a year as a ticket collector for the Atchison, Topeka & Santa Fe Railway, he dropped all pretense of returning to college and appealed to his Congressman father for help. Frederick had shown a gift for botany in school, so Foghorn, then chairing the House Agricultural Committee, got his son on the U.S. Department of Agriculture payroll as a field botanist. Soon he was engaged in fieldwork, part of the first government attempt to survey and catalogue Death Valley.

Beginning in April 1893, Funston traced the Yukon River from its frozen headwaters through the treacherous Miles Canyon and the White Horse rapids. Hearing rumors of a trapped whaling fleet on the Arctic Ocean, the ever-restless Funston made the 600-mile round trip on snowshoes—running out of food and being forced to slaughter a sled dog.

He thrived on adventure, but the Agriculture Department's $185 per month began to seem skimpy. When he learned that his letters home from Alaska had been successfully serialized in the *Iola Gazette,* Funston, now 29, scented an opportunity. He resigned and left for New York.

College chum White published an article about Funston's Alaska adventures in *Harper's Weekly.* "Nothing was said of his going, and no bugles were sounded upon his return," wrote

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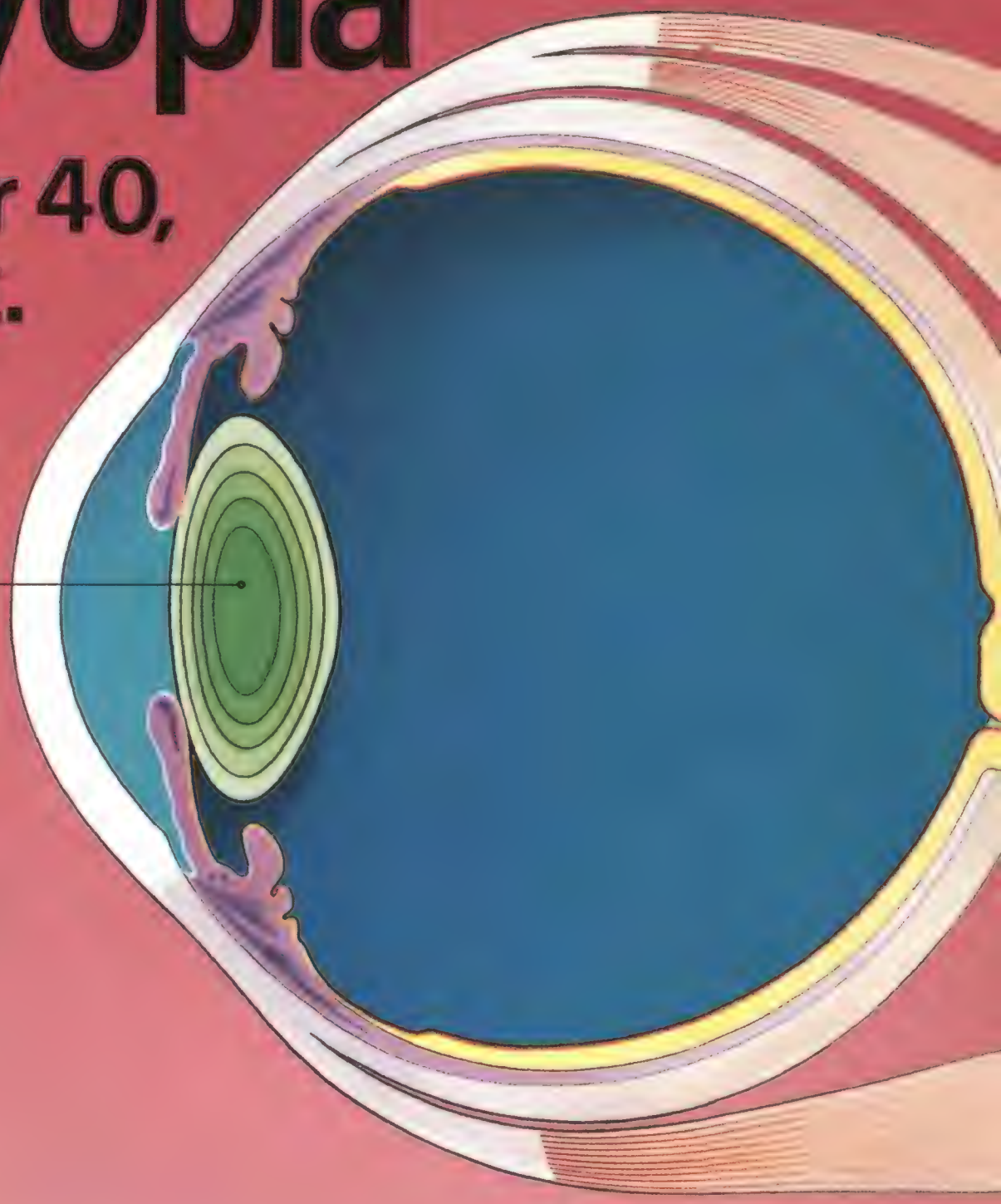

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White a little breathlessly, "yet for continued hardship, unceasing danger and uninterrupted adventure, probably this trip has not been excelled by any other on the American continent in this century." The young explorer happily furnished *Harper's* with a photograph of himself in a furry Arctic parka—taken in a studio in Kansas City (p. 136). But by late 1896 when his *Scribner's* article was published, Funston was far away from New York and the idea of writing.

One spring night he happened on a flag-bedecked rally promoting the cause of Cuban freedom against Spanish rule. By then, Cuban nationalists had been skirmishing with Spanish colonial authorities for a year, provoking harsh countermeasures against civilians. American politicians, in need of an issue, quickly latched on to Cuban independence, though for some it really meant annexation. In the 1896 national election, the issue helped sweep the McKinley Republican ticket into the White House.

Fit, unattached and almost 30, Funston swiftly signed up to aid the Cubans as a "filibuster," as gringo mercenaries were known then. His previous military experience was limited, as he said, to once "having seen a salute fired to President Hayes at a county fair in Kansas," but as an explorer and former college man, he was commissioned straight off as an artillery officer. *Harper's* obligingly promised to consider any stories he might submit.

In his first serious engagement, artilleryman Funston's guns pounded the besieged Spanish garrison town of Cascorra for five days—until his unit ran out of shells. The Spaniards were impossible to dislodge, but some miles away near Desmayo, a rebel cavalry charge routed a Spanish force, offering reporter Funston a chance to show a popular journalist's weakness for exaggeration. The fabled British charge of the Light Brigade at Balaklava, he contended, was nothing compared with what he had experienced at Desmayo. "But nobody has written a poem about us or ever will."

In March 1897, taking part in the siege of Jiguaní under the famed Cuban general Calixto Garcia, he was struck on the arm with a shard of hot shrapnel. A month's behind-the-lines medical furlough helped his mangled arm, but he had hardly returned to duty when he was drilled through both lungs by a Mauser bullet. Recuperating in a jungle hospital, he got typhoid, recovering just in time to preside over a dynamite-throwing gun that helped the Cubans beat the Spanish at Victoria de las Tunas. Though promoted to lieutenant colonel, he decided he'd had enough. His request for release from duty denied, Funston chafed at his post until he was thrown and rolled on by his horse, then impaled in the thigh by a stick.

This convinced the now gimpy-legged little colonel that his only chance of getting out was to desert. He forged papers sending him on a fabricated secret mission and made his way toward the coast until captured by a Spanish patrol. In the best heroic tradition, he ate his forged papers and convinced his captors that he was of no use to them, so they put him on the next America-bound ship. As Funston's ship steamed past Key West, the USS *Maine* rode at anchor waiting for the orders that would send it to Havana harbor. Funston didn't know it, but America was on the eve of real war. His military career had hardly begun.

By early March 1898, the *Maine* lay at the bottom of Havana harbor and though the flabbergasted Spanish, who actually had nothing to do with its sinking, did their best to avoid war, they met with little success. All across the state of Kansas, and throughout the nation, people were rushing to buy flags and hang patriotic bunting. President McKinley and his Congressional supporters were just about ready to turn loose America's untested war machine. All up and down the streets of Topeka, new handbills and posters touted lectures by one Frederick Funston, late of the Cuban insurgent army. When war was declared (April 25), Kansas formed three infantry regiments and Governor John Leedy made Funston, probably the shortest officer in the Army, a colonel of the 20th Kansas Volunteers.

Cuba was not in Funston's future,

At alfresco meal during lull in fighting, publicity-savvy Funston (right) put on grim face to please photographers—and amuse his staff.

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Turn-of-century cartoon genially lampooned Uncle Sam's new-found territorial ambitions—and resistance of the Philippines.

however. Thanks to the aggressive young Assistant Secretary of the Navy, Theodore Roosevelt, and Senator Henry Cabot Lodge sr., both bent on making U.S. influence felt around the world, a dusty war-games scenario had been unshelved in Washington. The plan dramatically expanded McKinley's policy of liberating downtrodden Cubans from the Spanish yoke. Spain's other colonial possessions—Puerto Rico, Guam and the faraway Philippine islands—were to be seized, too. On May 1, 1898, Roosevelt's protégé, Commodore George Dewey, sank a decrepit Spanish naval force in Manila Bay. Overnight the United States became a world power. Plans for occupation of the Philippines were already under way.

Colonel Funston and his 20th Kansas Volunteers sailed for Manila on October 25—two months after Spain had capitulated. As the immediate prospects for trouble seemed nil, he booked passage for Eda Blankart Funston, a pretty Oakland, California, piano teacher who had just married him. "It was thought that our duties would consist in helping to sit on and hold down the 'little brown brother' for a few months," he would recall.

But Filipino rebels had been struggling for independence from Spain for 25 years. In 1896 many had died during an unsuccessful revolution. When American naval units under Commodore (later Admiral) Dewey arrived in 1898, guns blazing, the rebel leaders believed the Americans were there to free the Philippines from Spain, as they had done in Cuba. No U.S. official said anything to the contrary. In fact, with our encouragement, the Filipinos finished up the job Dewey started, defeating what was left of the Spanish Army. But by late 1898 a Spanish-American treaty had been drawn up, and to the outrage of Filipinos, though it freed Cuba as planned, it turned the Philippines, Guam and Puerto Rico over to United States supervision. The treaty had yet to be approved by Congress, but in December, President McKinley blandly announced that the Philippines was to be "benevolently assimilated" into the new American empire. If that happened, fighting between the Philippines and its former benefactor was inevitable.

There is ample evidence that U.S. officials prepared for the violence be-

The author adapted this article from his book Sitting in Darkness: Americans in the Philippines.

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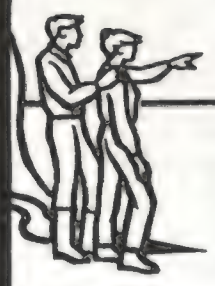

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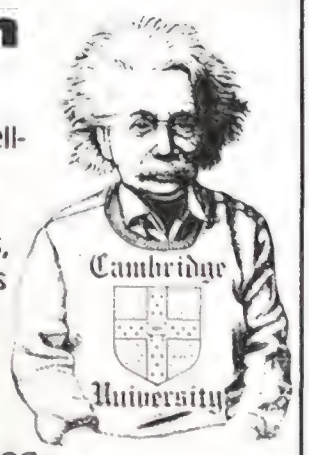

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tween American and Filipino enlisted men, and knew that the first shots fired would be American bullets and that this would signal an all-out maneuver against the Philippines. On February 4, 1899, 36 hours before the U.S. Congress was to vote on the Spanish treaty, an American sentry named Willie Grayson spotted some drunken Filipino soldiers wandering across the American lines. When Grayson shot them, the Philippine Insurrection was on in earnest. Before it ended, it would take three years and cost nearly 5,000 American and 250,000 Filipino lives. As firing erupted that night, the man who eventually would have so much to do with ending the war had retired for the evening. A pounding awakened him. "Come out here, Colonel," one of Fred Funston's friends shouted, "the ball has begun!"

"The first blow was struck by the inhabitants," McKinley told the nation. "There will be no useless parley, no pause, until . . . the insurrection is suppressed and American authority acknowledged and established." The truth would not be disclosed for 18 months, and by then it was too late. Responding to the President's address, Congress ratified the treaty and moved to supplement the 16,000 U.S. troops already dispatched on America's first overseas war.

Commanding the Filipino forces was Gen. Emilio Aguinaldo, an idealistic young firebrand. After leading the resistance to Spain, he had been elected President of the ill-fated Philippine Republic. Aguinaldo and his advisers at first looked to America as their protector, basing their constitution on ours. Now, Aguinaldo wrote, they had "no honorable recourse but to resist." But they faced trained marksmen and artillery. American units swiftly overwhelmed the Filipino forces, driving them northward from Manila onto Luzon's great central plain. Volunteers from Funston's 20th Kansas unit were always in the vanguard. "There goes Kansas," exclaimed Gen. Arthur MacArthur (father of Douglas) as the regiment swarmed, yelling and shooting, toward Caloocan, "and all Hell can't stop her." CALOOCAN TAKEN, the general soon wired headquarters. KANSAS A MILE IN ADVANCE OF THE LINE. WILL STOP THEM IF I CAN. Worried lest they be cut off, Funston's immediate superior, Brig. Gen. Harrison Gray Otis, sent a message forward inquiring how long

To penetrate camp of Philippine leader Emilio Aguinaldo, Funston (front right) and four officers posed as American prisoners of war.

Funston could hold his position. His reply passed into legend: "Until I am mustered out!"

Colonel Funston's dashing style quickly won him headlines, and his superiors, in need of good publicity for what soon became an unpopular war, encouraged him. He courted reporters as shamelessly as the most senior commanders but he was young and athletic and unafraid, and he possessed a gift for colorful invective. Whether they loved or hated him, newspapers all covered his exploits.

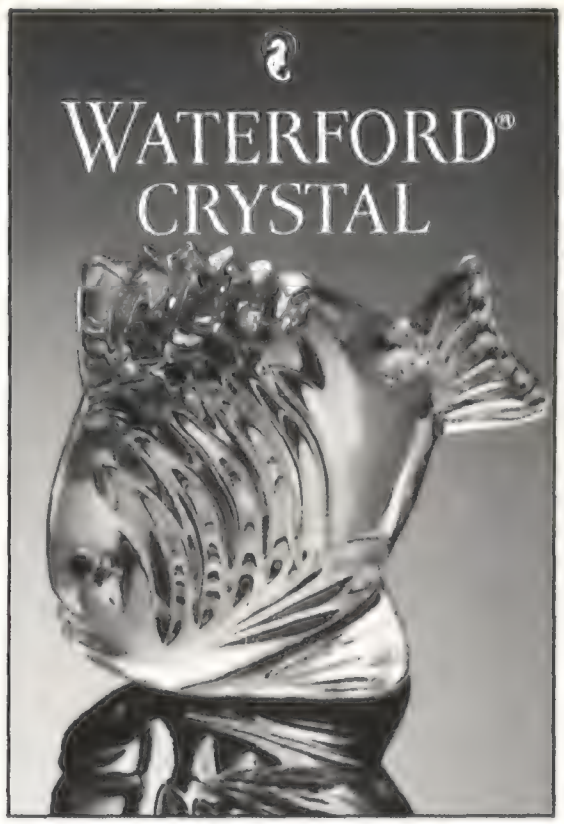
Funston was surrounded by reporters. Did the colonel think the American Army should remain in the Philippines, or leave, as the growing U.S. antiwar faction urged? Stay, of course, he would reply, "and rawhide these bullet-headed Asians until they yell for mercy." Pencils poised, the reporters would politely ask, "Colonel, your views on Aguinaldo and his army?" "A cold-blooded murderer and a would-be dictator" presiding over "a drunken uncontrollable mob" with "the minds of children."

He began a regular correspondence with Theodore Roosevelt, now McKinley's Vice President. To Roosevelt, the Filipinos were "Tagal bandits," "Malay bandits," "Chinese half-breeds" or "savages, barbarians, a wild and ignorant people, Apaches, Sioux, Chinese Boxers." In his view, "the most ultimately righteous of all wars is a war with savages," which establishes "the foundations for the future greatness of a mighty people."

In some ways the Philippine Insurrection invites comparison to Vietnam. Word began to filter home about inevitable combat savageries—but also about atrocities against helpless prisoners of war and civilians. There were stories that Funston had ordered prisoners and civilians shot. With characteristic heat, Funston denied them. "The stories of brutality on the part of volunteers were sent out by correspondents whom no one knew either in Manila or on the firing line," he claimed. "As for the soldiers who tell such tales, they are simply liars. As for the enemy, they are an illiterate, semi-savage people, who are waging war, not against tyranny, but against Anglo-Saxon order and decency."

He was brave to the point of being foolhardy, often risking his life to jump into the action when a prudent officer would have sent a subordinate. His men knew, though, that he would

Supposed "captors" of the Americans were four antirebel Filipinos and the young Spanish mercenary Lazaro Segovia (far right).



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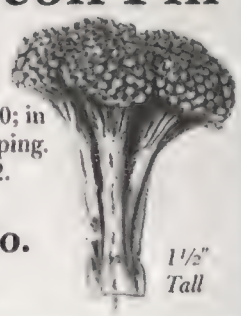

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never order them to do what he would not do himself. At the wide Rio Grande de Pampanga, when U.S. troops were halted by heavy enemy fire, Funston took a platoon across on rafts, ducking bullets. They established a beachhead, occupied a series of trenches, and finally cleared the Filipino positions. For this feat he and two subordinates received the Congressional Medal of Honor, and the college dropout and self-taught soldier was promoted to Brigadier General of the Volunteers.

After a furlough, and a hero's welcome in San Francisco and Kansas, Funston was given command of a brigade in the central Luzon plains. By then Emilio Aguinaldo had ordered his army to disband, adopt civilian clothing and continue the war as guerrillas. Though he continued to direct his forces and was regarded by Americans as their key enemy, only vague rumors had surfaced about his whereabouts—until February 4, 1901, when an orderly handed Brig. Gen. Frederick Funston a telegram.

Mission's success depended heavily on the coolness of 22-year-old Segovia.

Seventy thousand American troops occupied the Philippines in 1901, bogged down in Aguinaldo's sporadic guerrilla war of attrition. They had only suffered light losses, but the brutal climate and tropical diseases were making the war more and more difficult. "We had almost worn ourselves out chasing these marauders," Funston would write. The fateful February telegram provided what Funston thought was a way out. It said his men had caught a Filipino messenger carrying documents from the elusive Aguinaldo—whose own capture seemed the only way to close down the seemingly endless war.

Hastily sending for the messenger, Funston "forcibly" questioned him (his words) and extracted a story that Aguinaldo and a small band had scaled the Sierra Madre, which stands as a forbidding barrier to the narrow ribbon of Luzon's northeast coast. The heart and soul of the Philippine resistance was now in the tiny isolated village of Palanan, on the Pacific coastal plain.

Closeting himself with his trusted advisers, Funston concocted a brilliant, characteristically hazardous scheme. The captured documents showed that Aguinaldo wanted reinforcements—well, he would get them. But instead of his own loyal troops, he would be supplied with Filipino turncoats known as Macabebes—scouts who had eagerly worked for the Spanish and then joined the Americans, earning the lasting enmity of other Filipinos. The bogus reinforcements would be accompanied by a group of five American "prisoners"—of course, including Funston himself. Pretending to be dedicated nationalists, they would march more than a hundred miles over uncharted, unexplored and unpacified terrain, utterly cut off from outside aid, always at risk of betrayal, ambush, starvation, sickness and death. It was just the sort of challenge the

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Germany. Land of the strudel and the dumpling. Unfortunately, after a week of working lunches, I still hadn't gotten my hands on so much as a *wienerschnitzel.* Now I knew this was strictly a business trip, but you know what they say about all work and no *wienerschnitzel.* So I personally cancelled my afternoon seminar to go search for the perfect meal.

I discovered a *gaststätte* tucked away in a corner of the Bavarian Alps. It was like a gingerbread house set down on a storybook street. Everywhere I looked were bright shutters, animated frescoes, and window boxes blooming with pink and red geraniums.

Inside was equally charming. My waitress was even decked out in her *dirndl,* a traditional costume. Helga—yes, that was her real name—was a strapping woman with a cherubic face and blonde pigtails falling halfway down her back. She set down a couple of *biers*—what the Bavarians like to refer to as liquid bread. Because, as Helga noted with a laugh, "where there is a brewery there is no need for a bakery."

That afternoon I feasted on everything from *knödels* to *spätzle* to a roast haunch of wild boar. Between courses I was entertained by the remarkable Helga. She could grip six liter steins in each hand, perch a plate of *wursts* on her elbows and glide between the crowded tables, all without spilling a drop. And, oh yes, she brought me my *wienerschnitzel,* too.

When I was sufficiently stuffed, Helga swallowed me up into a hearty embrace. "*Vorsicht,*" she yelled. "Take care." I forgot to ask her what tomorrow's special was, but I doubted if tomorrow's seminar would be nearly as appetizing.

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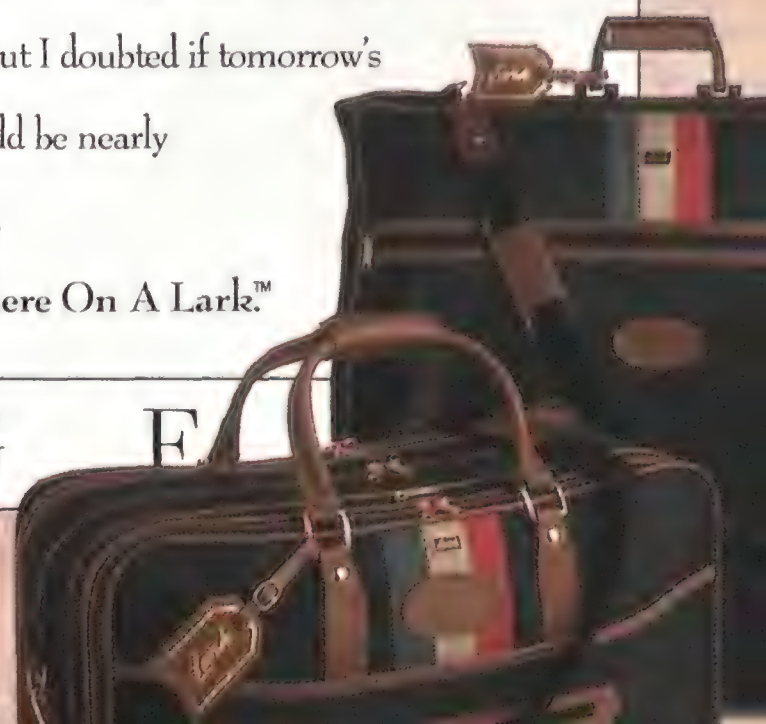

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adventure-hungry Funston relished.

"Funston," General MacArthur said, "I fear I shall never see you again." With those cheery words to spur him on, Funston began to assemble his party. The four other bogus prisoners (p. 144) were Funston's adjutant and first cousin from Kansas, Lieut. Burton Mitchell; Capt. Harry Newton, from Wisconsin; and two brothers from Washington State, Lieut. Oliver Hazzard and Capt. Russell Hazzard. Additionally, a brave and dashing young Spaniard in Funston's employ, Lazaro Segovia, was picked to pose as their captor, along with three of Aguinaldo's former officers, Hilario Talplacido, Gregorio Cadhit and Dionisio Bato (p. 145), who had joined the American side. The captured messenger—his name was Cecilio Segismundo—came along, too, closely watched by Segovia. Finally, the company of Macabebe scouts, 77 in all, was assembled. None of the Filipinos knew what the mission would be.

On March 6, 1901, the group climbed the gangplank of the square-rigged USS *Vicksburg* in Manila Bay, and under secret orders the ship moved south past Corregidor and around the southern Luzon coast. As the *Vicksburg* sailed for days through the San Bernardino Strait and out into the Philippine Sea, the Filipino scouts and officers were finally told of the mission. Most were terrified; some refused to participate. But Funston promised to shoot anyone who faltered. The scouts were given ragged rebel uniforms and battered rifles and were drilled in the elaborate ruse concocted by Funston: they had been summoned from rebel duty in Luzon's interior and while accompanying the messenger, Segismundo, had skirmished with an American party, killing some and taking five prisoners. Funston and the Spaniard Segovia counterfeited orders on captured rebel stationery. The whole scheme was so preposterous it might just work.

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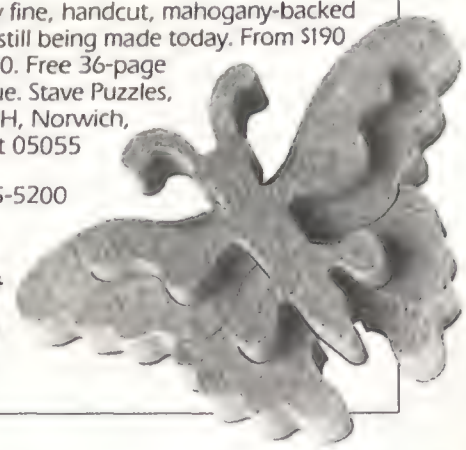

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men slipped into cutters and were conveyed to the beach. Within moments, the landing boats left them, disappearing back into the fog.

After a night huddling under a steady rain, Funston's party of counterfeit nationalists marched up the sound and entered the village of Casiguran. There was a great welcome. Everyone crowded to get a close look at the five woebegone American prisoners. Under Segovia's direction, his men began collecting provisions from the patriotic villagers, who thought they were aiding Aguinaldo's soldiers. Segovia regularly visited Funston in the locked house where the prisoners were placed, and Funston concocted a letter to be sent by village courier, telling General Aguinaldo about the group's approach.

On March 17, the meager offerings of the village were gathered—rice, some dried beef and fish, cracked corn, and 16 cackling chickens—and Segovia prepared the column for the 100-mile march. He and Funston knew that they were insufficiently provisioned, but there was no alternative. Every second wasted increased the danger of exposure. They had been obliged to conscript several villagers as guides. "The slightest word," reasoned Funston, "might send one of them scurrying ahead to Palanan."

The route took them through an immense forest, and finally back to a narrow ribbon of beach fringed by mountains rising steeply to 5,000-6,000 feet. During the evening meal, Segovia noticed that the Macabebes jostled one another for large portions and he warned them not to be hogs. But with daylight he discovered that half of their meat supply was already squandered. Funston ordered the food guarded and the marchers put on quarter rations.

It is difficult to understand how they survived in such terrain on only a few ounces of food a day. Eighty-one years later, some friends and I tried the same route. We were in better shape and far better provisioned, and we put away an enormous amount of dehydrated "expedition" food. But the northeast Luzon coast simply wore us out. The cordillera is heavily timbered, fringed with cliffs, inaccessible, forbidding. It is drained by unbridged rivers and hundreds of small, swift streams.

Without maps, and in wartime, Funston's people had to climb all those intervening mountains, ford scores of rivers and thrash through innumerable forests. During their infrequent rests, the scouts would scrape limpets from rocks to eat, and would catch the tiny fish of those parts; there was no game. At noon on the fourth day, Hilario Talplacido collapsed. Most of the rest of the way he had to be carried.

Segovia developed an abcessed foot. Funston was nearly paralyzed by rheumatism. Mitchell could not hold down his food and was rapidly losing weight. Half-starved marchers kept fainting in the heat. With each passing mile everyone grew more nervous. Desperate, they sent a note ahead with some nomadic tribesmen, begging Aguinaldo for food; next day they found the letter abandoned on the trail. "It seemed impossible that the madcap enterprise could succeed," Funston wrote. "I began to have regrets that I had led all these men to such a finish."

On the ninth day after landing, they saw figures far up the beach. Segovia sent a man ahead to reassure them and bring them closer. When this was done, Funston, out of earshot, watched the conversation anxiously from his place with the other prisoners. He saw the Spaniard finish talking, fall out of line and limp back toward the rear. As Segovia passed the captives he hissed out to Funston in Spanish. "It's all right," he said. "We have them!" The men were from Palanan—only ten miles distant—and had been sent to meet the reinforcements. They had even brought a little

After capture, guerrilla leader Emilio Aguinaldo showed war's wear-and-tear.

The square-rigger USS *Vicksburg* picked up Funston and Aguinaldo.

April 19, 1987

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food, just enough to get everyone through the night.

Next morning a more substantial meal arrived. But the couriers from Palanan also bore orders that the Americans were to be confined where they were. Funston and Segovia hastily conferred, worried about how their scouts would perform without the presence of their American officer. Finally they solved the problem. The Spaniard departed with the column, intending to go just a few miles before sending back another forged order summoning the American "prisoners" to the stronghold, thus lulling suspicions. Funston would wait out of sight until signaled to show himself in Palanan.

The beginning of this maneuver they carried out. But the "prisoners" were still so weak that they followed at a much slower pace, pausing often to rest. Up ahead, planning a peaceful entry into Palanan, Segovia's column finally came in sight of their goal, which stood on the far side of the deep, swift Palanan River. The town consisted of simple nipa-palm huts surrounding a large, former schoolhouse built on stilts. Everything was decorated with garlands and wreaths of flowers, and bamboo ornaments left over from a birthday celebration. The day before, Emilio Aguinaldo had turned 32. Across the river they could see the glint of field glasses trained on them from the schoolhouse, and Segovia prayed that his nervous Macabebes would not panic as they all crossed the river in skiffs. Once across, however, they were embraced by rebel officers. As he was escorted with Talplacido to the headquarters upstairs, Segovia noted that Aguinaldo's honor guard of 60 soldiers was standing at attention in the town square; the Macabebe scouts approached and faced them, also at attention.

Inside were more officers, all armed. A man appeared clad in a plain khaki uniform but wearing fancy Spanish riding boots. As soon as they saw him, Talplacido and Segovia leaped to their feet and gave him a crisp military salute. It was Aguinaldo. Though small and not physically impressive, he had an air of command. He welcomed them with a firm handshake, asking them how the war was going in central Luzon.

Finally Segovia saw his chance. Saying he needed to see to his men, he excused himself and went outside. By prearranged signal he raised his hat. The town square erupted in gunfire as the scouts fired into the unsuspecting honor guard. Aguinaldo, thinking his troops were firing a welcoming salute, rushed to the window. "Stop that foolishness!" he cried. "Don't waste ammunition!" He saw his troops taking flight into the jungle. Perplexed, he turned back into the room only to see the Spaniard rushing in with gun drawn, yelling, "Surrender!" Aguinaldo's officers had drawn their guns; they jumped protectively to his side. Seeing movement, Segovia opened fire, wounding two officers. Another pulled out a white handkerchief of surrender, even as he kept

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Aguinaldo from drawing his pistol, to prevent further bloodshed.

Funston and the four other Americans heard the shooting. Frantically paddling across the Palanan, they were met on the embankment by Segovia, who conducted them to the headquarters. "You are a prisoner of war of the U.S. Army," the Kansan said to the still-perplexed Aguinaldo. "I am General Funston, commander of the expedition." The enormity of what was happening had not fully sunk in and Aguinaldo was dazed. There were tears in his eyes. "Is this not some joke?"

As planned, the *Vicksburg* was waiting for them two days later on Palanan Bay.

News of Aguinaldo's capture burst like a star shell over the war-troubled United States. By the spring of 1901, Americans had grown weary of the Philippine struggle. Instantly they took Funston to their hearts for granting them such an amazing victory. On street corners and in taverns, in the corridors of power and the halls of state, debates ensued over what could be an adequate reward for such a heroic feat.

But, as had happened with everything else Funston did, protests and even some outraged objections surfaced amid the tumult of praise. "I deplore the capture of Aguinaldo," said the elderly abolitionist William Lloyd Garrison. "A brave patriot and lover of liberty hunted down by troops of a powerful nation, a professed champion of self-government, is a sad sight for the opening of the 20th century." Though William Jennings Bryan believed Funston's deed might "end the war for the present," he could derive no satisfaction from it. "We cannot administer an empire in the Orient and maintain a republic in America." Funston was awarded a Silver Star and a promotion into the Regular Army. The fan mail poured in, including the letter from his hero, Vice President Teddy Roosevelt. Who could blame him for thinking of politics?

Funston fan Teddy Roosevelt finally was forced to shut the general up.

Early in 1902 the Philippine Insurrection wound to a close. Aguinaldo, under Manila house arrest for more than a year, signed the requisite American loyalty oath. Funston returned to the United States on medical leave, then went on the lecture circuit. But as Funston toured, a Senate committee began hearing testimony from some of his men charging him with torture and a "take no prisoners" policy in 1899. Newspaper editors called for his court martial. Funston suggested that they be strung up to the nearest lamppost. The general also expressed contempt for the hypocrisy of political leaders who at the start of the war had boldly wanted the United States to strip Spain of everything, but now were "playing at peanut politics and gambling in the blood of their countrymen."

Two days before making that charge he had another bout of malaria. Friends wondered if he was delirious —or had taken to the bottle once more. Funston's ideological twin, Teddy Roosevelt, who had succeeded the assassinated McKinley, sent word that he was "in cordial sympathy" with Funston, but could he please be less outspoken. Unheeding, Funston continued to speak his mind at lodge

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dinners and testimonials from San Francisco to Denver, Chicago and New York, trailing outraged editorials in his wake. Under fire not only about Funston but about the U.S. militarism he had done so much to encourage, T.R. ordered Funston to make no more public utterances. A letter of censure went into the general's military record as well.

Political ambitions ruined, deprived of all those ego-nourishing headlines, Funston now drank heavily—enough so that people noticed. But in time the controversy receded. By nature, of course, he was not happy as a peacetime soldier. Action was his genius. And in April 1906, fate gave him a chance to regain a hero's luster. He was serving as head of the Military Department of California when the San Francisco earthquake reduced much of the city to fiery rubble.

His immediate superior being out of town, Funston swiftly proclaimed martial law in San Francisco and dispatched troops to prevent looting. They blasted entire blocks as firebreaks, and organized emergency stations for the wounded and shelter for the homeless. They also set food price ceilings to prevent profiteering. There were complaints from those whose property had been destroyed by the Army—they argued that their homes were needlessly sacrificed by Funston's troopers, who improvised their firefighting tactics as they went along. But all these were drowned in a tumult of praise for "the man who saved San Francisco." The grateful city even named a boulevard after him.

He became a teetotaler. Even so, for years further promotion eluded him. It was not until 1914, at age 49, that he made major general. Posted to command the Southwest border during Pancho Villa's incursions, Funston generously did much to foster the career of John (Black Jack) Pershing, who headed the American force sent to capture Villa.

Time mellowed Funston's acerbic tongue. In fact, it was widely agreed that had he lived, he, rather than Pershing, would have been given command of the American Expeditionary Force in Europe during World War I—with who knows what fame and success. But on February 19, 1917, less than two months before the United States would declare war on Germany, he collapsed of a heart attack while at dinner with friends in a San Francisco hotel. The orchestra was playing "The Blue Danube." The warrior's last words were, "How beautiful it is."

A haggard soldier in 1916, Funston was in line for high command—but died.

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Book reviews

Borderland: Origins of the American Suburb 1820-1939
John R. Stilgoe
Yale University Press, $35

Suburbia has a far longer history than the average suburbanite is aware. In the burbs, the past tends to take the form of applied style—Colonial trim or Tudor beams. And of all history, there is none less appreciated in suburbia than the history of suburbia itself.

Now John R. Stilgoe, a Harvard professor of visual and environmental studies, and of the history of landscape, has reached back to the beginnings not of suburbia so much as of the various forms of the suburban ideal.

This book has the feel of a first volume: part of what is intriguing about it is that it surveys a suburbia underlying present suburbia. Stilgoe plans a sequel that will look at what he calls the "transformation of the so-called suburban landscape into the as-yet-unnamed environment sprawling around Princeton in New Jersey, Tyson's Corner in Virginia, and elsewhere." In an article that perhaps pointed to that work, he made the wonderful observation that the contemporary suburban house and lot are a model, or perhaps parody, of the traditional farm, with the garage instead of the barn and the backyard instead of the back forty.

Stilgoe discusses the notion of the "come outer"—the American who replayed the spirit that inspired emigration from Europe and immigration to the West in moving out of the city. He understands the verb "to commute" as carrying more connotations than simply to traverse distance between home and work. "To commute" is also to ameliorate or lessen—to soften not only the conditions of being "sentenced" to work in the city but the tedium of living in the country. Stilgoe's idea of the borderland is a concept more specific than suburbia. It seeks suspension, like a space station located between the balancing gravities of planet and moon, between city and farm.

The author explores the play of dependences in the relation of borderland to city. He cites the astonishment of an 1850 observer at the milk that, still "warm from the cow," arrives by rail to appear on urban breakfast tables. The other side of the process is exemplified by the borderland beekeeper who, in 1908, has his hives and swarms railshipped from the city. (My suburban neighbor, also an avocational apiarist, receives his queen bees via the U.S. Postal Service.)

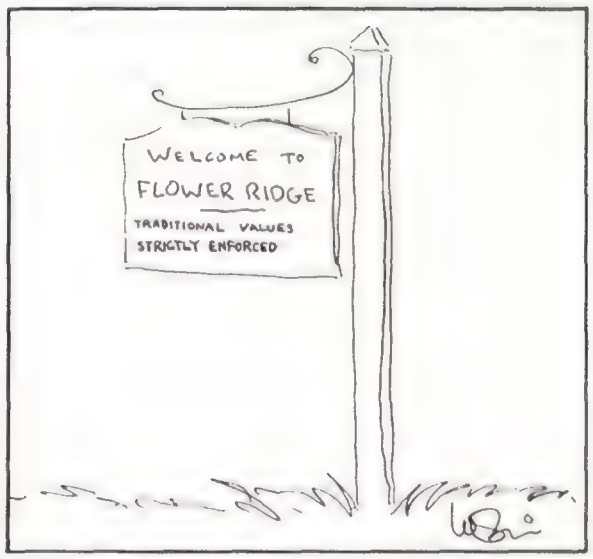
Beginning with the ferry from lower Manhattan to Brooklyn Heights and

the omnibus lines established in Philadelphia in 1829, suburbs depended on their means of commutation. Steamboat, railroad, trolley and auto all have had their day and shaped their own characteristic suburbs. The success of the planned suburb of Shaker Heights, outside Cleveland, depended on its creators' ownership of a private electric trolley line.

Stilgoe combines the most specific sort of physical observation with tracings of the subtle and shifting meanings the landscape held for its residents and observers. One way of defining the borderlands, for instance, is specifically as a place "where houses are so far apart that even in winter they cast shadows only on their own lots . . . the borderlands are distant enough from cities to be free of pigeons."

The range of reference in this book is wide—from Chaucer's "suburbs of a toun" to Melville's *The Piazza* to Faith Baldwin's 1938 *Station Wagon Set.* Stilgoe quotes Henry Hudson Holly—the architect of the mansion Thomas Edison bought in Llewellyn Park, New Jersey, one of the country's first suburbs—on the virtues of rough, picturesque landscape. He revisits the vast magazine and newspaper literature of country and suburban living, and the intellectual critiques of city, country and the borderland life as they change over time.

Suburbia has risen and fallen in intellectual estimation. Beginning with *Babbitt,* it came in for the same sort of criticism that the insular, self-satisfied life of the small town had in Sinclair Lewis' earlier *Main Street.* Lewis Mumford and his admirers championed city life—albeit the life of a city revitalized according to their ideas—and criticized the life of the suburbs as escapist and even infantile.



New Yorker cartoon carries to excess the suburban ideal of old values.

Now, more and more, the suburbs are being rehabilitated, both physically and intellectually, by the same baby boomers who helped rehabilitate many city neighborhoods. Young suburbanites today, often with some degree of irony, are quietly embracing their parents' values—they want for their children much of what their parents wanted for them. Suburbs are acquiring history, if only the history of remembered childhoods, primal reruns of *Leave It To Beaver* lifestyles. Both parents and children could do no better than to learn the geography and history of their turf from the ground up—by studying the landscape around them, as Stilgoe shows how.

Phil Patton
Author of a book on American design to be published in 1990

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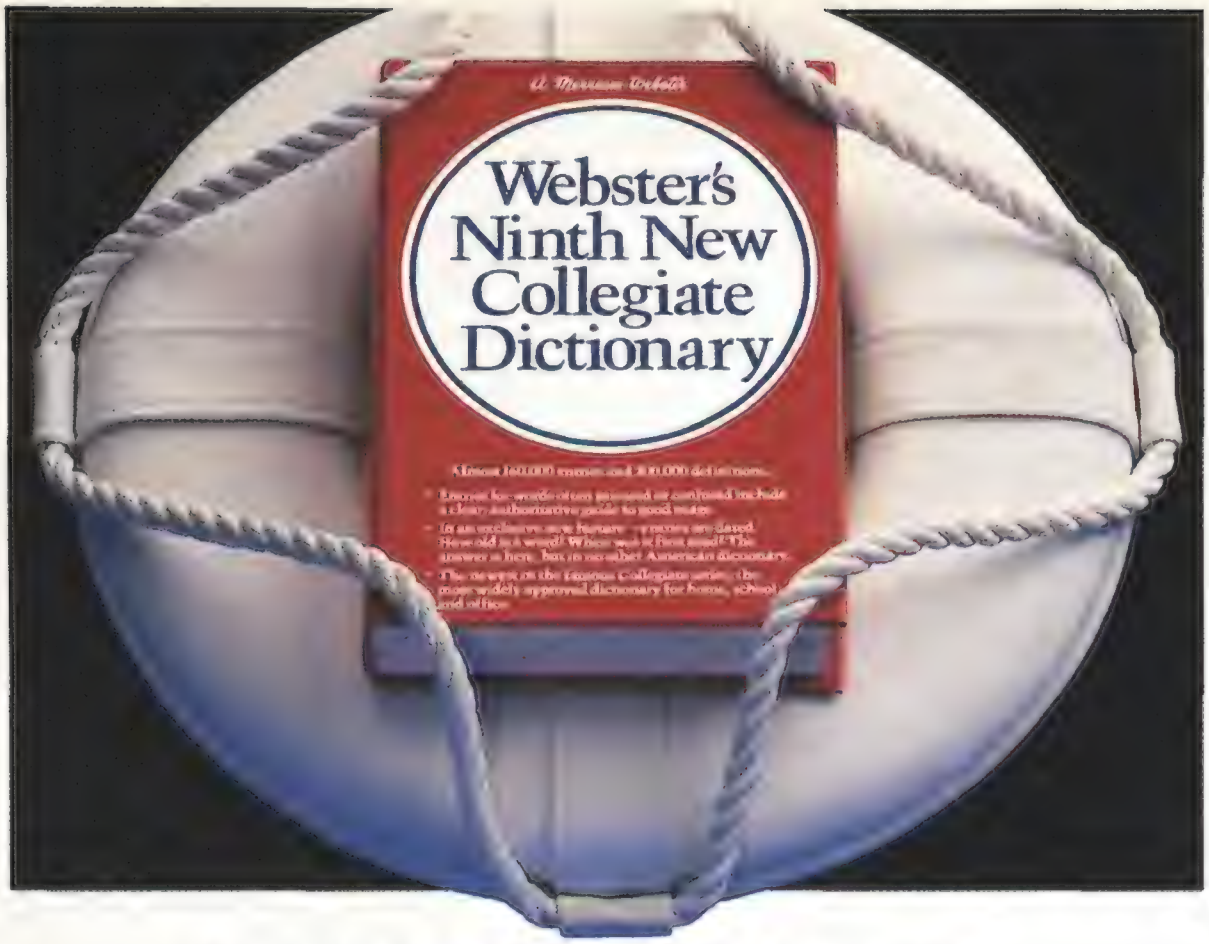

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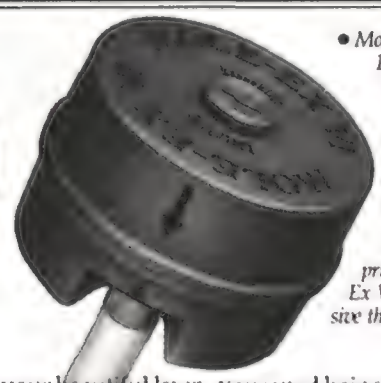

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Doctors: The Biography of Medicine
Sherwin B. Nuland
Knopf, $24.95

A Taste of My Own Medicine: When the Doctor Is the Patient
Edward E. Rosenbaum
Random House, $16.95

Before Hippocrates introduced rationality into the practice of medicine, the ancient Greeks attributed healing to miracles of the gods, especially Aesculapius. The sick lay in temples on hillsides, dreaming their cures while sacred serpents licked their wounds and priests chanted prayers. Hippocrates and his followers established the concept that every disease has a discoverable cure.

In this splendid history, told through the biographies of its leading figures, Sherwin Nuland limns medicine's fitful development over 2,500 years. We see the Greek physician Galen, who, in a famed series of experiments, tied off the artery of a living animal to prove that the arteries contain not "spirit" but blood. However, while Galen established the basic principles of scientific investigation, he also impeded progress. For not only were his conclusions, based on animal experiments, often wrong, but the great and influential Galen deemed further research unnecessary. One "need only become familiar, at small cost of trouble, with all that I have achieved by active research during the course of my entire life," he wrote, violating his dictum of trusting one's own eyes.

Fifteen hundred years later, a contemporary of Copernicus, Andreas Vesalius, provided the first accurate knowledge of human anatomy through human dissection. Under permissive Venetian leadership, the University of Padua had become a great research center, and Paduan officials often postponed criminal executions until Vesalius was ready to dissect his next cadaver.

Nuland, a teacher of medical history and surgery at Yale, re-creates history in the expansive manner of Fernand Braudel's *The Mediterranean*, so one feels the stringent social and political pressures brought to bear on the healers and researchers. Nuland brings us Vesalius, daring to contradict the revered Galen at a demonstration dissection, with students, professors and artists gathered around. Desiring to understand anatomy in order to paint divine forms, the artists, who enjoyed

church support, lent respectability to the anatomist's work.

A more surprising spur to the advancement of medical knowledge, Nuland suggests, was war—a connection he traces convincingly from the 10th to the 20th centuries. In the 16th century, for example, accepted treatment for gunshot wounds was the application of boiling oil. Then an uneducated barber-surgeon, Ambroise Paré, ran out of oil while treating wounded soldiers on a battlefield and resorted to a soothing concoction of "yolkes of egges, oil of Roses, and Turpentine." His patients fared far better than those who had been treated conventionally, leading Paré to resolve "with my selfe never so cruelly to burne poore men" again. He added: "See then how I have learned to dresse wounds made with gunshot, not by bookes."

Like other great innovators, Paré recognized that his predecessors' teachings "held few immutable truths." In addition to great advances in diagnosis and surgical technique, he contributed to treatment of such lesser problems as insomnia in the ill, and he is worth knowing for this advice alone: "One may cause it to rain artificially by pouring down from some high place into a kettle, so that it makes such a noise that the patient may hear it, and by these means shall sleep be provoked on him."

By this history's end, a circular pattern emerges. From the ancient belief in the mystery of disease, medicine progressed to the theory that the causes and cures of all disease could be discovered—an assumption on which "virtually every advance of modern scientific medicine" has been made, Nuland observes. But, he says, this assumption is about to change.

"We are beginning, just barely beginning, to look at disease as the outcome not of one precise agency, but of the concatenation of a group of factors acting together to produce a synergism of etiology. Why does one man smoke two packs of cigarettes a day and never develop lung cancer, while his neighbor does the same and dies of malignancy in his fifties? . . . The answers are not to be found in the theory of primary causes, but rather in a new approach to biomedical theory, a new paradigm, as some have called it." In the work of transplant surgeons, who face questions such as how cells recognize other cells as foreign, Nuland sees a return to confrontation with the unknown, and perhaps the unknowable.

A darker legacy—lapses in modern medicine when confronting the known—is apparent in *A Taste of My Own Medicine.* This eloquent account by a physician, Edward E. Rosenbaum, cuts to the heart. Rosenbaum had consulted a colleague and friend, who diagnosed the author's coldlike symptoms as a cold. "I liked him," Rosenbaum recalls. "He told me what I wanted to hear." When Rosenbaum's condition failed to improve, the colleague sent him to a psychologist. Finally, a younger doctor with the latest, very sophisticated equipment found a malignant lesion hiding under his vocal cord.

It's all here: the horror of learning the truth, the indignities of being a patient, the possibility of error in the treatment. After 25 days of radiation therapy, Rosenbaum learns that his technician plans a test to "see if we've been hitting the target."

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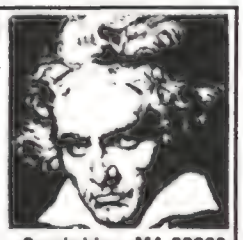

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"I thought everything was fixed on Day One when you set the machines and tattooed me," Rosenbaum responds. The technician explains that weight loss can cause the tattoo marks to shift.

Rosenbaum thinks, "If my tattoo marks have shifted, it means they have been aiming at the wrong target. They have been missing my vocal cords and the site of my cancer. But they can't go back and correct the error because my skin has already taken the maximum dose of X ray. . ."

He lies on the treatment table full of anger, because he knows the test is not being done for his welfare but for future statistics; and yet he remains silent, because he also knows from his own experience how much doctors need to be respected and loved by their patients.

Caught between two worlds and in a position to understand both, the author writes with surprising power about sickness and healing, though his account reaches well beyond these concerns. Affectionately, he recalls his father, who suffered severe headaches, and the day in 1934 when Rosenbaum was accepted into medical school. He told his father what it would cost. His father responded that he would just open his gas station earlier each day. "What about your headaches?" the younger Rosenbaum asked. "When my oldest son is a doctor," his father said, "I won't have any more headaches."

Carol Eron
Author of *The Virus That Ate Cannibals*

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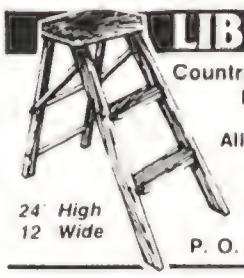

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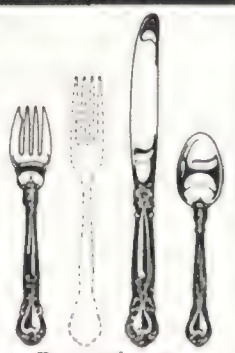

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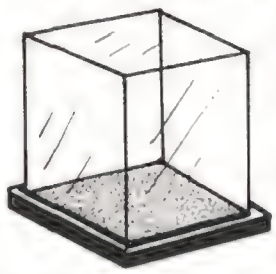

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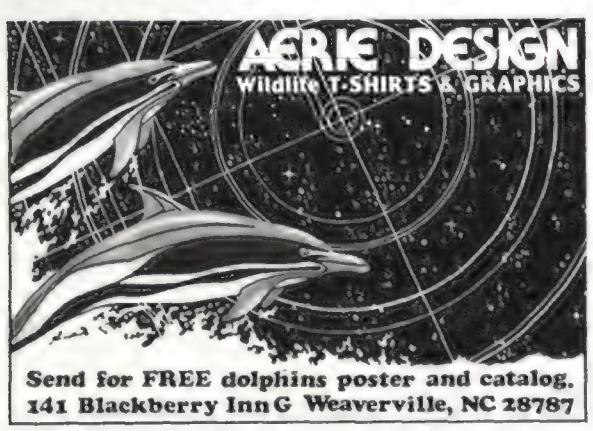

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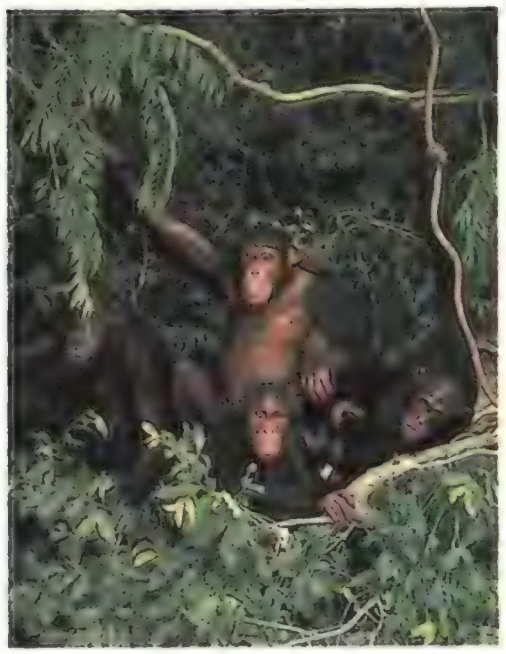

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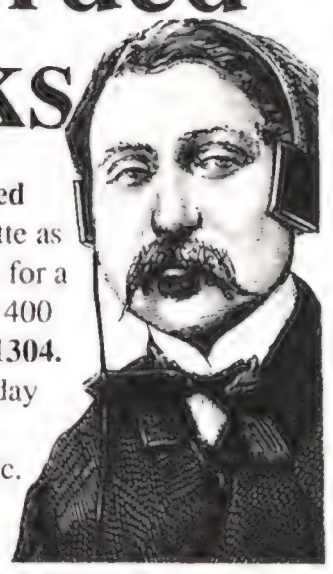

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Special May exhibits and events

National Museum of American Art
The Art of Paul Manship (through July 23) See *Highlights continued*, page 168.
Photography of Invention: American Pictures of the '80s (through August 13) Images by 88 experimental practitioners.

Anacostia Museum
The Real McCoy: Afro-American Invention and Innovation, 1619-1930 (May 21-November 5) An overview of

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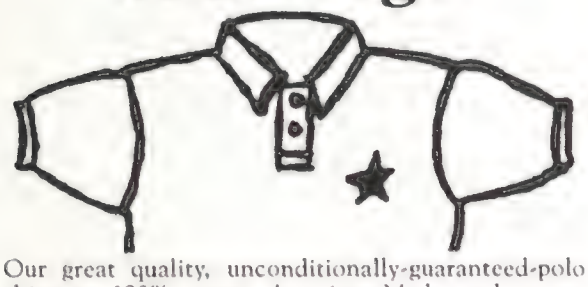

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Japanese Art: Recent Acquisitions (through September) A ceremonial palanquin and screens.

National Portrait Gallery
Isamu Noguchi: Portrait Sculpture (through August 20) The first retrospective look at the artist's representations of subjects from George Gershwin to Clare Boothe Luce.
The "Edgehill" Portrait of Thomas Jefferson (through 1992) The painting by Gilbert Stuart, on view for three years.
The First Federal Congress (through July 23) A 200th-birthday commemoration featuring portraits, memorabilia.

National Museum of Natural History
John Muir's High Sierra: A Watercolor Diary by Tony Foster (May 15-August 13) The Cornish artist's images, painted during an eight-week hike in 1986.

National Museum of African Art
Gold of Africa: Jewelry and Ornaments from Ghana, Côte d'Ivoire, Mali and Senegal (through August 28) A celebration of the goldsmith's art.
Sounding Forms: African Musical Instruments (through June 18) First international exhibition devoted to these instruments as sculpture.
Royal Benin Art Creations from court artisans, 15th through 19th centuries.

Hirshhorn Museum & Sculpture Garden
Directions: Ericka Beckman (May 10-July 23) Sound-and-light installation with photographs, showcasing the work of the New York filmmaker and sculptor.
Buster Simpson "WORKS" (May 10-July 23) An outdoor installation by the Seattle-based environmentalist-artist.
Thomas Eakins Photographs (through June 26) Motion studies, portraits, Arcadian scenes in honor of the 150th anniversary of photography.
Recent Acquisitions, 1986-1989 (through May 14) A selection of works by a wide range of contemporary artists.

National Museum of American History
The Ceremonial Court Permanent installation re-creates White House spaces from 1902 to the present.
Duke Ellington: American Music (through April 1990) Memorabilia commemorating a musical legacy.
American Television from the Fair to the Family, 1939-1989 (through April 1990) Artifacts tracing the rise of television in American culture.
The Seasoned Eye II (through May 31) Fifty images by older photographers.
The Way to Independence: Memories of a Hidatsa Indian Family, 1840-1920 (through September 30) A chronicle of American Indian experience.
American Women of the Etching Revival (through May 31) Centennial exhibition featuring more than 70 works.

National Air and Space Museum
Hubble Space Telescope A full-scale test model of the telescope to be launched aboard a space shuttle in 1989.

Cooper-Hewitt Museum (New York)
L'Art de Vivre: Decorative Arts and Design in France, 1789-1989 (through July 16) More than 400 objects created by French artisans, celebrating the bicentennial of the French Revolution.

Renwick Gallery
The Boat Show: Fantastic Vessels, Fictional Voyages (through August 6) Renditions of fanciful ships by 15 contemporary American artists.
Bound to Vary: Billy Budd, Sailor (through August 6) Unique handmade bindings for a limited edition of Melville's classic in a show organized by the Guild of Book Workers.

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A Bright Shining Lie: An Evening with Neil Sheehan (May 17; 8 P.M.) The National Book Award-winning author on his exploration of the Vietnam War.

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Columbus, Ohio (May 6-June 18) *Hooray for Yiddish Theater in America*, Leo Yassenoff Jewish Center.
Hastings, Nebraska (May 6-June 4) *Family Folklore*, Hastings Museum.
Hot Springs, Arkansas (May 6-June 4) *Remaking America: New Uses, Old Places*, Majestic Hotel.
Salt Lake City, Utah (May 6-June 18) *Tracks in the Sky: Wildlife and Wetlands of the Pacific Flyway*, Utah Museum of Natural History.

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Reintroducing Manship's art

In 1912, anyone looking for America's most celebrated young sculptor would have found himself knocking at the green door of a Greenwich Village townhouse. At his Washington Mews address, 27-year-old Paul Manship, recently returned from Europe, had established a studio.

From that atelier, filled with plaster models and plans for projects, Manship introduced works that dazzled the critics. His first show of 96 bronzes sold out, inaugurating a career that captivated Manship's patrons, and his public, for the next 30 years.

The sculptor's distinctive melding of classical motifs and Art Deco's streamlined forms touched off a rage for virtually anything he produced. "His extraordinary craftsmanship," wrote one admirer, "has made him the envy of half the sculptors in America and the despair of a host of would-be imitators."

Manship's inspired preoccupation with the ancient world and its underpinning of myth and legend stamps almost every piece he shaped. As a student in Rome and traveler in Greece, the young artist had studied and sketched monuments, sculptures, fountains. His elegant and winsome treatment of classical themes won accolades at every turn.

Throughout his lifetime, Manship commanded important commissions, including the *Prometheus* at Rockefeller Center in Manhattan. Yet his reputation, eclipsed by the ascendance of modernist abstract art, declined steadily in the post-World War II era. "The Art of Paul Manship," through July 23 at the National Museum of American Art, reintroduces this influential native sculptor after decades of neglect.

The show, which is accompanied by curator Harry Rand's absorbing and handsome catalog, continues on to Columbus, Ohio; Austin; Fort Wayne; Tampa; Memphis; Milwaukee and New York City.

Kathleen M. Burke

Time and the Fates Sundial, cast in bronze for display at the New York World's Fair in 1939, was then largest in existence. Its pointer was more than 80 feet long. The reduced-scale version here is only 54½ inches high.

Bronze Owl, from 1932, is a stylized rendering of bird beloved by Athena.

Manship prepared for *Group of Bears,* 1939, by making careful life studies.

Artist drew on sources in Greek and Egyptian sculpture for his *Playfulness.*

Diana was one centerpiece of a major Manship show in New York in 1925.

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Colorado Rockies *August 5-11*: Enjoy outdoor program at the Nature Place.

Take Me Back to the Ball Game *August 7-13*: Baseball buffs visit Chicago, Detroit and Cleveland.

Aviation Weekend *August 8-13*: Abbotsford Airshow, Boeing, Seattle flight museum.

Railroading the Rockies *August 11-19*: By private car and narrow-gauge steam train.

Alaska Cruise *August 11-22*: Explore the Inside Passage aboard an expedition ship.

Pacific Northwest *August 15-26*: Seattle, Vancouver, Victoria, San Juan Islands.

Black Hills & Crow Fair *August 16-25*: Includes Yellowstone and the Tetons.

NEW **Romance of the Gold Rush** *September 2-9*: From Sacramento to San Francisco, sail aboard the tall ship *California*.

White Mountains of New Hampshire *September 11-20*: A hiking experience.

NEW **Detroit Auto Barons** *September 14-17*: Visit estates of Ford, Fisher and Dodge.

Appalachia *September 15-23*: Kentucky artists and writers introduce mountain heritage.

NEW **Columbia River Cruise** *September 21-30*: Sail from Victoria to Portland and up Columbia to Snake River.

Foreign Study Tours

People's Republic of China Tours in 1989 for new and repeat travelers; new itineraries include recently opened destinations.

Odyssey of Flight *June 2-13*: Paris Air Show and 45th anniversary of D-Day.

Highlands of Scotland *June 2-18*: Culture and natural history; a relaxing sojourn.

NEW **Cotswold Walks** *June 8-20*: A variety of walks through the English countryside.

Poland *June 9-25*: History and culture in Warsaw, Kraków and other cities.

NEW **Gardens of Brittany and Normandy** *June 10-23*: Includes private gardens.

British Isles Voyage *June 16-July 3*: Remote hamlets and islands aboard the *Argonaut*.

Cave Art in France and Spain *June 19-July 4*: Cantabrian coast, the Pyrenees, Dordogne.

Swiss Countryside Walks *June 21-July 6*: Moderate or challenging day hikes.

Walks in England's Lake District *June 29-July 12*: Natural and cultural history.

Scotland by Train *July 6-19*: Skye, Glasgow, Edinburgh, Inverness, the Highlands.

NEW **England for Families** *July 10-20*: Storybook London and the Cotswolds for families with children, grandchildren (ages 7-14).

Iceland *July 22-August 6*: Circle the island, study natural history, geology.

Baltic Passage *July 28-August 15*: Cruise to Denmark, Sweden, Finland, Leningrad.

NEW **Lena River-USSR** *July 28-August 16*: Exclusive cruise through Siberia.

NEW **Voyage to Sumatra and Java** *August 1-17*: Visit Singapore, Jakarta, Borobudur.

Austria by Train *August 3-16 or 17-30*

Kenya Wildlife Safari *August 3-20*

Trinity Seminar *August 11-26*: Study rare books, ancient manuscripts in Dublin.

Voyage to Greenland and Hudson Bay *August 19-September 4*: Natural history, Inuit culture.

Mongolia *August 20-September 18*: Explore the exotic land of Genghis Khan.

Heart of Asia *August 30-September 25*: Traverse the USSR and China along the old Silk Road.

Himalayan Kingdoms *September 1-22*: Explore the fascinating world of Ladakh, Nepal and Bhutan.

Canadian Rockies *September 6-17 or 19-30*

Indonesia *September 7-28*: In-depth look at Sumatra, Java and Bali.

Gardens of Ireland *September 10-24*

Yugoslavia *September 12-24*

Iberian Ways *September 12-26*: Portugal and Spain.

Ireland Walks *September 14-26*

Seine Cruise *September 15-28*: Explore treasures of Flanders, Normandy and Paris.

Oxford Seminar *September 16-30*

Edinburgh and the Scottish Countryside *September 17-30*

Greece-Turkey *September 27-October 9*: Cruise on the *Sea Cloud*.

Orinoco-Amazon Voyage *October 1-19*: For Contributing Members.

Japan Journey *October 7-19*

Smithsonian Seminars

Join fellow Associates who share your special interests at the Smithsonian and around the country. Take part in seminars with Smithsonian curators and guest experts.

Oshkosh, Wisconsin *September 21-24*
Learn techniques of aircraft restoration during lectures and hands-on workshops led by specialists from the Air and Space Museum's Paul E. Garber Facility and the EAA Air Adventure Museum in Oshkosh.

Santa Fe, New Mexico *October 10-15*
Study Hispanic, Indian and Anglo art traditions during lectures and a visit to the School of American Research. Or, trace the history of archaeological discoveries in the Southwest during sessions taught by Smithsonian faculty and local scholars.

Write to Smithsonian National Associate Program, Washington, DC 20560 or call (202) 357-4700 for tour brochures, (202) 357-1350

Research Expeditions

Contribute your time, talent and financial resources to Smithsonian research. Work with curators at Washington, D.C. museums and archives, or at field sites around the country and the world.

Documenting Our Veterans Memorials

Washington, D.C. *May 24-June 7*
Join with Smithsonian photographers to record Memorial Day ceremonies at the Vietnam Veterans Memorial and other military monuments. Contribute your work to the Smithsonian's photographic archives and the Division of Armed Forces History at the Museum of American History.

Competition in the Forest

Front Royal, Virginia *May 27-June 10*
Track, observe and record the behavior of mammal and bird populations at the Smithsonian's Conservation and Research Center in the Blue Ridge Mountains of Virginia. Your data will add to an extended monitoring program of all flora and fauna in the area.

American Sculpture Inventory

Washington, D.C. *June 4-16*
Help establish the first nationwide survey of American sculpture as you research traditional carved stone and cast metalworks as well as contemporary sculptures and assemblages in the capital area.

British Enterprises in the New World

London *June 18-30*
Conduct research in London's libraries and museums on the British colonization of the Caribbean. Your findings will contribute to a new Smithsonian exhibition.

Creating Aerospace Curricula

Washington, D.C. *July 9-21*
Using galleries at the Air and Space Museum for inspiration, teachers (K-12) help education staff develop innovative aerospace activities for the hundreds of school groups that visit the museum annually.

Air and Space Archival Treasures

Washington, D.C. *July 23-August 4*
Help archive historic documents and films at the Air and Space Museum and at the Paul E. Garber Facility.

Dynamics of an Active Volcano

Costa Rica *October 1-13 or 15-27*
Monitor the frequency and intensity of Arenal Volcano's eruptions. Study the effects of ash and acid rain (produced by the volcano) on nearby vegetation.

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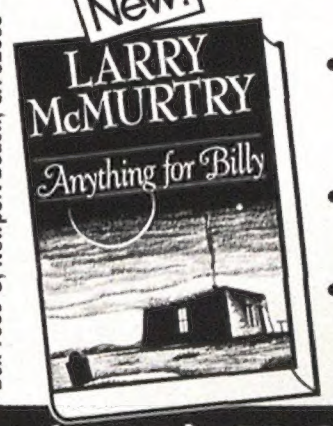

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By Richard Wolkomir

Celebrity dirt, but not in the usual sense

To get a bead on where fame stands in the '80s, consider Barry Gibson, a truck driver for a Lansing, Michigan, lumberyard, who drove to Beverly Hills with a shovel in his car. At the homes of stars like Johnny Carson and Linda Evans, he jumped out, dug dirt from their gardens and then scrammed.

Back home in Lansing, Gibson packed the dirt in tiny vials and labeled each with the name of the star from whose garden it had come. He marketed the vials, at $5.95 each, as "Celebrity Dirt."

He began in May 1986. By August, he had sold thousands of vials of Celebrity Dirt. Dolly Parton's dirt sold best, followed by the dirt of Burt Reynolds, Sylvester Stallone, Joan Collins, Elizabeth Taylor, Larry Hagman, John Forsythe and lots, lots more.

That's the new big deal: Tom-Dick-and-Harry fame—and the need to trade on it quick. Even the stars themselves are affected by the need to increase their fame—Clint Eastwood and Sonny Bono became mayors, Paul Newman has evolved into a spaghetti sauce baron. One Calgary Olympics hero, British ski jumper Eddie (the Eagle) Edwards, got airtime and financial backing precisely because he could hardly jump at all.

TV makes for easy-access elitehood. By contrast, Plutarch's *Lives*, the 2,000-year-old celebrity best-seller, zeroed in on character and achievement. Though he dealt to some extent with what today concerns *Lifestyles of the Rich and Famous*, Plutarch never told us the dimensions of Lycurgus' swimming pool or what make of chariot Alcibiades drove or even Pericles' net worth in drachmas. Even movie stars got a better deal in the pre-TV days. When they appeared on the silver screen their images were huge and shining. And you had to go to a special place to see them. Now they're in your house, boxed.

Everybody is aware of crime and confession, or better still, kill-and-tell fame. If Jack the Ripper were alive today he might have copped a temporary insanity plea and now be growing rich on the book-and-lecture circuit. But a fair number of new celebrities literally aren't human. The celebrated spokesdog Spuds MacKenzie, for instance. San Francisco's Museum of Modern Mythology exalts famous figments, like Rice Krispies' Snap, Crackle and Pop. The Birmingham, Alabama, Century Club's 250 members—from cities all over the country—are iron water pipes that have gone 100 years without a rupture.

The *Guinness Book of World Records* may record fame in the most minimal way, but at least it celebrates more or less harmless acts of skill or tenacity. Who would not feel a better, humbler person after trying to break the longest-single-unbroken-apple-peel record, currently held by Kathy Wafler, of Wolcott, New York. Nervily operating on a huge specimen with a razor-sharp knife, Kathy produced a peel 172 feet 4 inches long in one continuous slice.

Perhaps the same is true for those competing on "nonmusical instruments," like plumbing pipes and radiators, at the International Strange Music Weekend, near Olive Hill, Kentucky. Susan Duncan, a past winner from Ashland, Kentucky, achieved several minutes of fame by playing "My Old Kentucky Home" on a stethoscope fitted with two whistles.

In an age known for bizarre personal fashion statements, something may be said for the National Association of Men's Sportswear Buyers. Not long ago they picked the Rev. James Konrad, of Peru, Illinois, as owner of "America's Ugliest Tie," a cravat billed as an original creation but which, some witnesses suggest, looks suspiciously like a woodchuck's tail.

Populist celebrity's cutting edge is the Hall of Fame. No need to speak of Cooperstown, New York, or Canton, Ohio. There are Halls of Fame for cowboys, inventors, miners, accountants, exotic dancers, bowlers, pickle packers and the owners of fast-laying poultry. A couple of years ago, *People* writer Fred Bernstein published a book called *The Jewish Mothers' Hall of Fame*. At the high end of such specialized celebrity are people who wouldn't be caught dead in a Hall of Fame and who are not known to the world at large, but whose skill has made them legendary among their skillful peers. Every archer in America knows Fred Bear, and John Dobson, who appeared in last month's SMITHSONIAN, has virtually been canonized by amateur astronomers.

Another way to use fame is to exert ingenuity in choosing the quality you single out to publicize. Cleveland's new Rock and Roll Hall of Fame is all very well, but I'd like to see a Hall of Fame for People Who Have Washed the Dishes 12 Months Without Breaking a Plate or Cup (I qualify!). And how about a Hall of Fame for Parents Traveling Alone with Toddlers on Long Airplane Trips? Or Drivers Who Let Cars Stuck on Sidestreets Ease into Traffic?

While I'm on the vehicular subject, what about a Hall of Fame for Repairmen Who Return Your Phone Calls? And I've always wanted a Hall of Fame for Deli Clerks Who, by Dead Reckoning, Can Slice Off a Pound of Swiss Right on the Button. Finally, while we're at it, why not a Hall of Fame for the citizen who can think up even better Halls of Fame?

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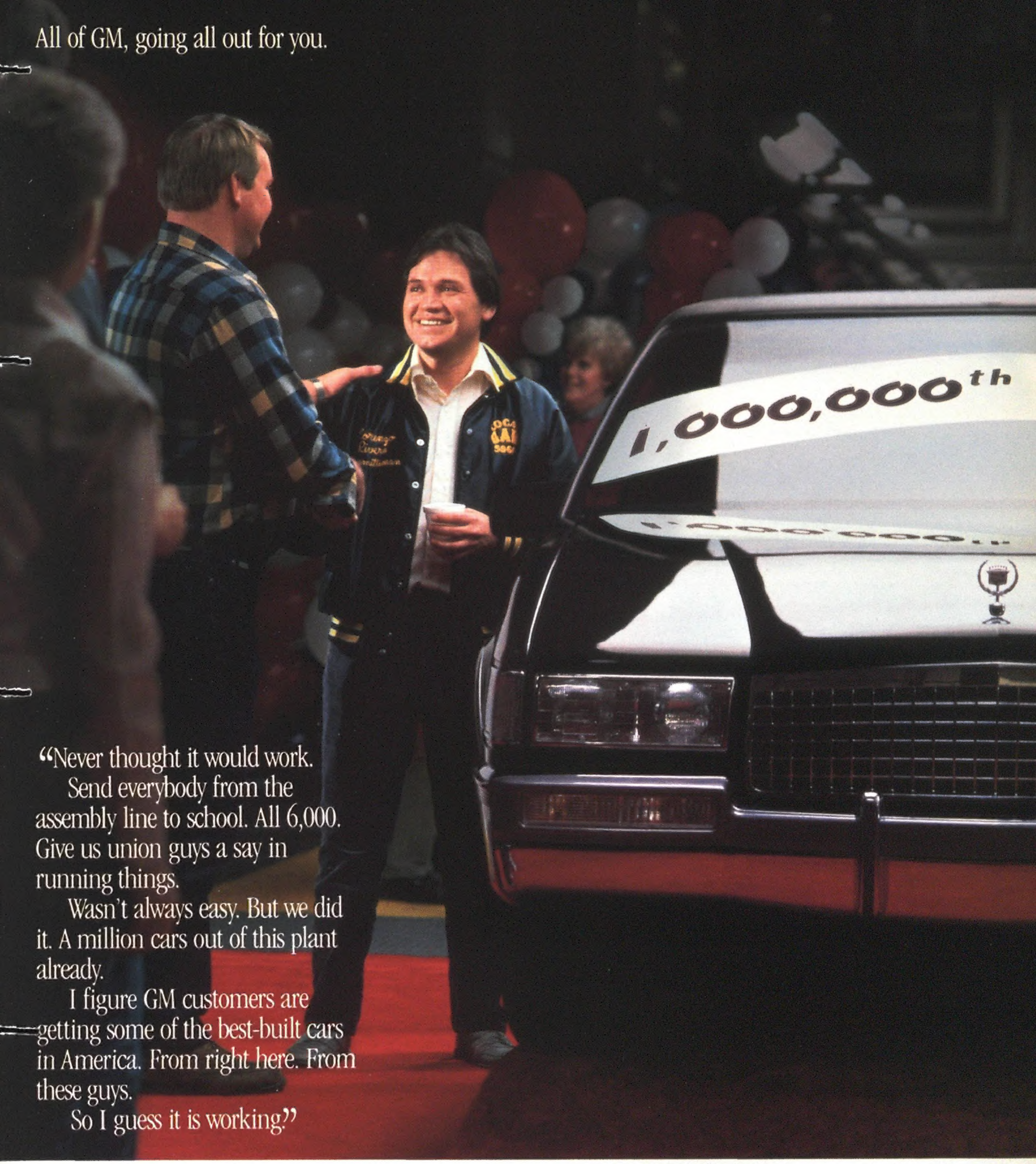

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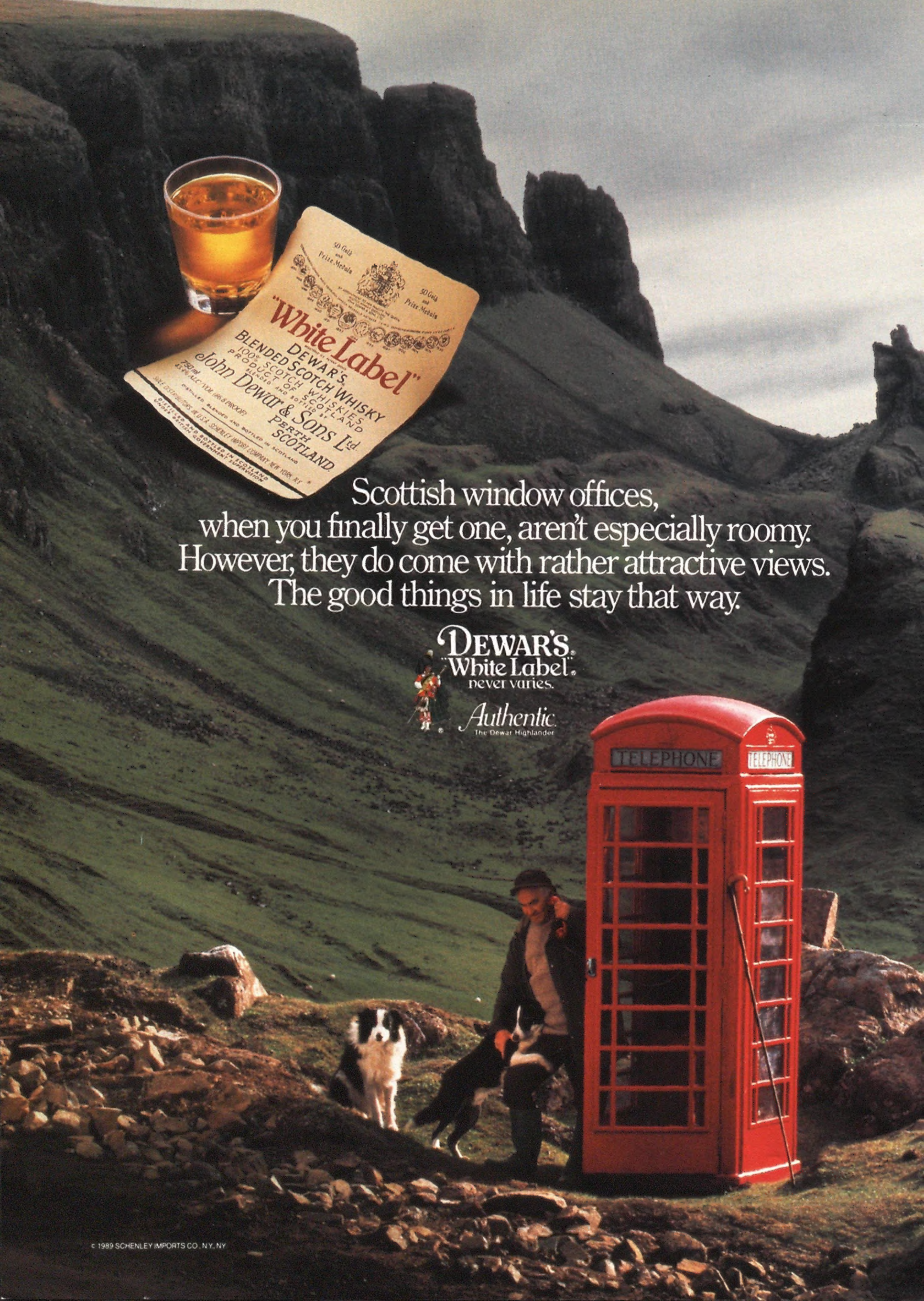

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